

The Mining Journal

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More Agonies in U.S. Re-appraisal

THE suggestion that the United States was making an agonizing re-appraisal of its material needs, and in the process was rediscovering what its minerals policy ought to be, was made in this column in our issue of May 24 last. It can scarcely be said that much progress has as yet been achieved towards the formulation of a policy more in line with present needs, but the headaches are certainly piling up as each proposal comes under fire from a different quarter.

The Administration, in striving to obtain the approval of Congress for its much criticized programme, might be likened to the driver of a span of oxen, all pulling in different directions, hauling a wagon along a bumpy road which is not clearly signposted.

The break in the price of zinc is attributed to the lack of any immediate prospects of important government help, either from the new revised barter deal programme of the Agriculture Department, or from the Administration's new long-range mineral programme. Though barter deals were recently resumed, they are said to be so wrapped up with restrictive conditions that it is almost impossible to arrange transactions. Under the modified programme materials delivered through barter deals may not be processed in the U.S. This means that concentrates may not be brought in and smelted in the U.S. Formerly offers involving foreign zinc processed in the U.S. constituted the greater part of all zinc offered in barter transactions.

The long-term programme recommends new government aid, primarily for lead and zinc, through a new import excise tax. It would continue subsidies for beryl, columbium-tantalum and chromite, but provides little else beyond continuation and expansion of existing government research and exploration programmes. When testifying before the Senate Interior Committee, however, the Secretary of the Interior, Mr. U. S. Seaton, promised that the Administration would come up with programmes for other metals and minerals when the need arose. Copper, he stated, had not been included in the programme in view of "the continuing good price" and the fact that a 2 c. excise tax comes into effect when the price falls below 24 c. The long-range programme, it was emphasized, provides "a continuous appraisal of problems within the industry on a case-by-case basis and an evaluation of each minerals industry problem in terms of its national significance".

The Secretary's detailed account of why so many metals were left out of the programme and his assurance of "continuous appraisal" appear to have achieved a more favourable reception for the programme than could have been anticipated from the remarks of Senator Murray, chairman of the Senate Interior Committee, who termed it a "fiasco" and "a betrayal of the mining industry".

The Department's proposal provides for an import excise tax on increases in the imports of lead and zinc or an increase in the duties on imports of lead and zinc, either of which would require Congressional action. Mr. Seaton has indicated his preference for replacing the present tariff by a sliding scale import excise tax, instead of adding such an excise to present tariffs. The taxes would increase as the price of either metal dropped.

It was scarcely to be expected that these proposals would be universally acclaimed. From the standpoint of U.S. mining interests, one of the principal weaknesses is that the taxes would be based on three-month average prices. It is contended that such a long interval would encourage heavy imports to beat application of the import tax, if it appeared to be pending.

Other metal-producing countries have lost no time in expressing their very understandable hostility to the proposed imposition of excise taxes on imports of lead and zinc at a higher rate than present tariffs. Protests have already been made by Canada, Mexico, Australia and Peru. Cominco declares that imposition of higher tariffs, import quotas, or both, by the U.S. Government would be detrimental to the Canadian economy as a whole. The Peruvian National Mining Co. has stated that the proposed tax would be a mortal blow to Peruvian mining and would mean the closing down of mines, with a loss of some \$20,000,000 per year to the country's economy.

Apart from objections on economic grounds, doubts have been cast on the legality of the Administration's programme. The Tariff Commission and the House Ways and Means Committee have notified the Senate Interior Committee that the sliding-scale import excise taxes may contravene article 3 of GATT, which specifically forbids GATT countries from leaving taxes on imports from other members in excess of those applied directly or indirectly on like domestic products. The view has been expressed, however, that, according to the provisions of other sections of the GATT (articles 19 and 28), the Department need only notify countries in advance and consult with them.

Other GATT countries can doubtless retaliate by raising tariffs on U.S. exports to their countries, and it is understood that foreign tariff retaliation is, in fact, expected by the State Department, since it has no legal authority to offer compensatory tariff preferences.

The Administration's life-saving programme, if it might so be described, appears to be fraught with difficulties and dangers. Unfortunately, while the life-savers are battling with currents, cross-currents and tidal forces, the victims are sinking fast! Lead and zinc have shown surprising resistance to uncertainty and disappointment in regard to U.S. stockpiling plans. Nevertheless, their prices have fallen by £18 and £20 respectively since May 1. One of the most essential requirements of any rescue operation is speed. It is to be hoped, therefore, that the present uncertainties surrounding U.S. minerals policy will soon be dispelled, even if the remedy proves worse than the disease!

AMERICAN LABOUR-MANAGEMENT INVESTIGATIONS

The Senate investigation of union and employer activities, in progress at the time of writing, may have far-reaching effects which will have a bearing on the mining industry. Because of disclosures during the past year in Portland, Oregon, the International Brotherhood of Teamsters was the principal target during the early stages of the investigation and the testimony adduced was, to put it mildly, shocking, particularly with respect to the use of union funds by high officials for personal gain.

When before the committee Mr. Dave Beck, president of Teamsters, took refuge in the fifth amendment in reply to more than 100 questions. The fifth amendment to the Constitution of the United States provides that no one can be compelled to answer a question when the answer might tend to incriminate or degrade him. How-

ever, AFL-CIO, of which Teamsters is the largest unit, takes a dim view of the use of the fifth amendment and, even before this investigation, issued a statement that any official resorting to it in a matter involving union affairs would not be considered as a fit person to serve in such capacity. Acting on this policy AFL-CIO promptly suspended Mr. Beck as a vice-president of that organization which, however, does not affect his standing with Teamsters. The Ethical Practices Committee of AFL-CIO has summoned Mr. Beck to appear before it and it is obvious that at such a hearing the fifth amendment will avail him nothing.

Reaction within the union, as might be expected, has been divided. There are some, perhaps a majority, who have evinced a blind loyalty to their officials and believe that the king can do no wrong and others who have suspected that they were being exploited and will strive for a thorough house-cleaning. The annual meeting of Teamsters will be held in the autumn and a bitter fight for control between the two elements is expected to develop.

Mr. Beck has threatened that if he loses this contest he will withdraw his followers or if AFL-CIO clips his wings seriously he will take Teamsters in its entirety out of the major organization.

If Teamsters, or any considerable part of its 1,500,000 members, separate from AFL-CIO the logical thing would be for it to ally itself with Mine-Mill and Longshoremen, perhaps in a union of national scope which could offer some competition to AFL-CIO. When the latter was organized it was estimated that there were about 2,500,000 workers in the country either unorganized or not affiliated with national unions. With as influential an organization as Teamsters as a nucleus it is foreseeable that a second national organization could be set up which would have considerable influence in labour affairs. From what we can read from the past it is to be feared that such influence would be unhealthy.

If such should come to pass and Mine-Mill affiliate, it would undoubtedly enhance the latter's prestige and it is entirely likely it would welcome back the old leaders who were the cause of its expulsion from CIO. It is a very general belief that the recent change of front was a matter of expediency and that deep down the membership was in sympathy with the policies that brought it into disfavour with the parent organization.

As to the picture as a whole, there are many who would welcome a major schism in union ranks, in the hopes it would lead eventually to a weakening of union power or, even, to the eventual disruption of the labour movement. The more conservative—doubtless in the majority—feel that AFL-CIO is giving the working men the right kind of leadership and that a radical lessening of its power would do no good, either to labour or management.

MINE TAXATION IN FIJI

The Legislative Council of Fiji is to consider a proposal to exempt from income tax and royalty for a period up to five years the associated gold mining companies which have worked the Emperor, Loloma and Dolphin mines. A concession in 1952 allowed capital expenditure on exploration of orebodies in the Vatukoula area to be written off against taxable profits. The companies consider that the results of exploration justify capital investment on a large scale to exploit the deposits at deeper levels. They have prepared a programme of capital expenditure on the Emperor Mine, of £A930,000, of which £A750,000 must be found as new capital; the period estimated is five years.

The Minas Gerais Triangle, Brazil

DR. OTHON HENRY LEONARDOS, of the Council of Mines and Metallurgy, Brazil, describes minutely the mineral resources of the Minas Gerais Triangle in a series of articles published by *Engenharia, Mineração e Metalurgia* (Rio). The Minas Triangle, a large tract of land in the extreme north-west of the State, lies between the Paranaíba and Grande rivers, extends eastwards to the San Francisco river and south to the 20th parallel, which passes through Belo Horizonte.

Occurrences of complex minerals of columbium, titanium, thorium, uranium, and rare earths, such as thorium-uraniferous pyrochlore, believed to be economically exploitable, have been proved in volcanic chimneys in the Paranaíba Basin, at Barreiro de Araxa, Tapira de Sacramento, and in the municipality of Catalao, writes our Brazilian correspondent.

The volcanic intrusion of Barreiro de Araxa was surveyed from the air in 1954. Ground prospecting was carried out by FERTISA, a company of mixed state and private capital, organized in 1953 to exploit important apatite deposits at Araxa, with reserves of 90,000,000 tons of phosphoric rock, containing 15-35 per cent of phosphoric anhydrite, up to 7 per cent barytes and variable percentages of magnetite. Prospecting by FERTISA has resulted in the marking out of 186,000,000 tons of ferruginous rock, with a 3 per cent average of pentoxide of columbium, equivalent to 5 per cent pyrochlore. The reserve in the first 45 metres drilled is estimated at about 4,000,000 tons of pentoxide of columbium, 130,000 tons of thorium oxide, 60,000 tons of uranyl and 60,000 to 90,000 tons of rare earths.

The Barreiro de Araxa deposit is believed to be the biggest known single reserve of columbium and thorium and there is no doubt as to the possibilities of recovering the principal metals contained in the pyrochlore. The following is the percentage composition of the latter: pentoxide of columbium, 54; zirconium oxide, 2; titanium oxide, 2; ferrous oxide, 5; oxide of manganese, 6; lime, 16; magnesium, 0.9; cerium earths, 6; thorium oxide, 9; uranyl, 0.22.

FERTISA has applied for permits to exploit four-fifths of the area; permission to work the remainder has been transferred from the original owner to DEMA, of Rio de Janeiro.

Other deposits are being investigated by the Department



The coal beneficiation plant at Capivari de Baixo, Minas Gerais

of Mineral Production (DNPM) at Piloés and Tapira, in the municipality of Sacramento, Serra Negra and Bebedouro de Salitre, in Patrocínio. Samples taken at Tapira reveal an average of 4.35 per cent of pentoxide of columbium, equivalent to about 10 per cent of pyrochlore. The reserves of mineralized rock are estimated at 200,000,000 tons.

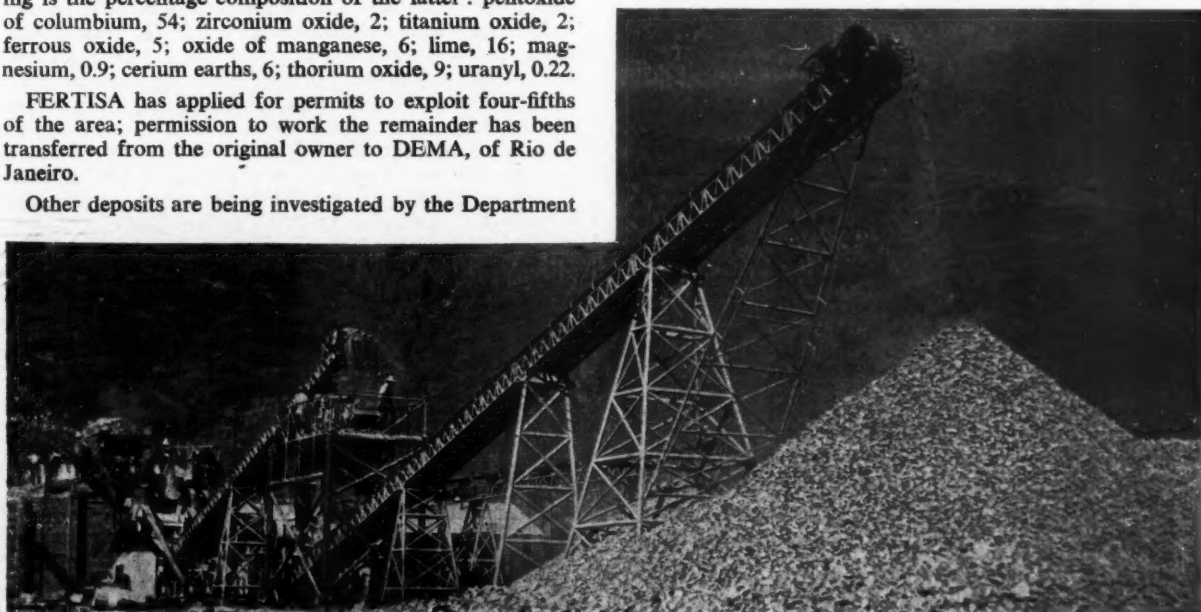
Native platinum has been found in the tufa of Serra das Mesas and in Mata da Corda. The latter deposit has an average of 2.1 gm. of platinum per ton of rock, Serra das Mesas 4.5 gm. of gold and 0.26 of platinum on the northern slopes and 2.4 gm. of platinum on the southern incline.

Iron ore exists in seven municipalities of the Minas Triangle, manganese in three. Several deposits of rutile exist, and two occurrences of chromite have been located.

Over 20 deposits of lead-silver minerals are known to exist in the San Francisco Basin and await prospecting. In June, 1956, Companhia Níquel de Tocantins was authorized to prospect rich veins of zinc copper mineralization, near Vazante, with DNPM's assistance. Calamine and willemite, with small quantities of smithsonite, form the matrix of the fault breccia, which crops up over a width of 60 m. in parts, extends for five km. and probably links up with other deposits four km. distant. A large orebody is indicated that from available samples may average 35 per cent and a minimum reserve of 3,000,000 tons.

Occurrences of lead, zinc, silver and vanadium have been proved to the north-east of Vazante, at Romas, Lontra, Serra de Cantinho and Itacarambi.

Stone-crushing plant at Cuieté quarry, Minas Gerais



Wide Range of Research on Mineral Dressing

Complete ore treatment plants, with all associated equipment, are manufactured at the Fraser and Chalmers Engineering Works of the General Electric Co., situated at Erith, Kent. Before quotations for capital expenditure on plant are made, however, it is always desirable to carry out tests on a sample of the ore, since there are probably no two ores in the world which are identical. Investigations on a laboratory scale are therefore undertaken, both to determine the most suitable type of dressing process, or combination of processes, and to decide the degree of crushing or grinding required and the most efficient way of handling the various products. By carrying out such tests, the optimum number and size of machines for the scale of operations envisaged can be determined. A department of The Research Laboratories of the General Electric Co., at Wembley, Middlesex, has been specially equipped for carrying out ore and mineral dressing investigations for the Fraser and Chalmers Engineering Works. Started originally as a flotation laboratory, the department has gradually extended its scope.

SOME modern ores are so complex that to obtain a product of the required purity it may be necessary to treat them by virtually every available means. The mineral dressing laboratory is accordingly provided with apparatus for testing by all recognized mineral dressing processes, including those recently developed such as the Humphreys spiral and the cyclone. Its investigations are supported by the auxiliary services available to all the G.E.C. Research Laboratories at Wembley, such as chemical, spectrographic and X-ray diffraction analysis. During test work, X-ray diffraction and other techniques are used to determine what minerals are present in the ore, how they occur, and how they are associated with one another.

Preliminary preparation of the ore sample consists of crushing, if required, by jaw-breaker, rolls or hammer mill, and screening by Sherwen vibrating screen, followed by division into smaller samples suitable for further treatment. The crushed material can be further reduced in batch ball or rod mills, fine sizing below 30 mesh B.S. being carried out with a hydraulic classifier. Desliming can be carried out with the cyclone. Relatively coarse material can be treated in the heavy medium separation plant or by jigging. Finer material can be concentrated by tabling, Humphreys spiral or flotation. Suitable material can be concentrated by the low-intensity wet or high-intensity dry magnetic separator or by the high-voltage "electrostatic" separator. Gold ores can be treated by straking, barrel or plate amalgamation and cyanidation, with roasting or flotation if necessary.

For control of test work, a Rotap sieve-shaker is used for screen analysis and a Haultain infrasizer for size analysis of dusts in the sub-sieve range. A Haultain superpanner is used for gravity separation and a Frantz-type separator for magnetic separation.

The superpanner has proved particularly valuable when used in conjunction with X-ray and spectrographic analysis. Rare minerals present in very low concentrations in an ore can be isolated on this machine in order to facilitate identification. The Frantz magnetic separator is usually operated in conjunction with the superpanner, the ore being broken down into a very large number of constituents.

The heavy media separation plant at the laboratory has a 20 in. dia. cone for containing the medium in which the heavier mineral sinks and the lighter floats. For comparison, it may be stated that a full-scale unit built by the Fraser and Chalmers Engineering Works for West Africa has a cone with a diameter of 14 ft. The experimental unit is fitted with a Sherwen vibrating screen for recovering the sink and float minerals from the medium, which is recirculated by means of a pump and airlift which can be very precisely controlled. A plant of this size will take $\frac{1}{2}$ -in. particles and a test can be run on 3 or 4 lb. of feed. The upper particle size for which the process is normally suitable is of the order of 2 in., the lower size being approximately 14 mesh B.S., or smaller in some cases.

Magnetic media, either magnetite or ferrosilicon powder, are generally used, these being readily cleaned and recovered by means of a small wet magnetic separator. A recent development is the use of atomized ferrosilicon, which is much cleaner than the ground variety formerly employed, does not decompose, and allows a much higher working density to be obtained. A density of 3.2 has been achieved without any difficulty.

The Humphreys spiral is a type of machine which cannot be scaled down. The laboratory is equipped with a standard 5 turn, model 24A, full-size unit, which is arranged for closed-circuit amenability tests. Its capacity is about one ton per hr. A feed sample, weighing not less than 30 lb., is essential for a single test in this machine.



Above is a view of the laboratory, showing cyanide agitators and corduroy strakes, hydraulic classifier and flotation machines. At right, Haultain equipment in operation

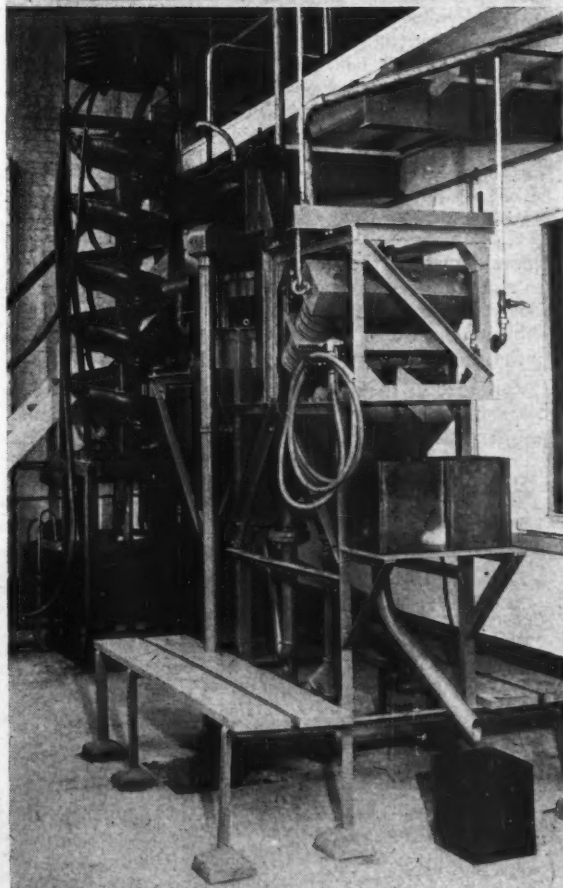
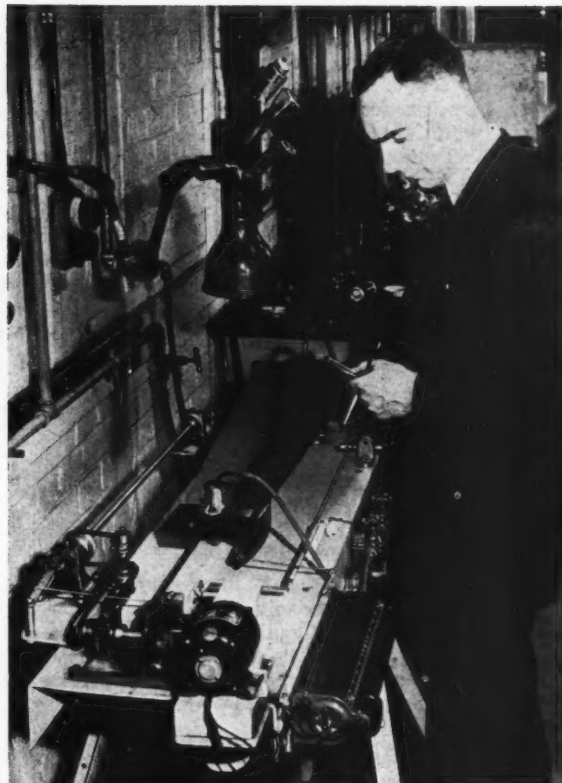
The process is limited to a particle size range of roughly 10 to 200 mesh.

Laboratory tests are essential before the construction of a flotation plant. The flotation equipment at the laboratory comprises two Denver cells and a special unit of the company's own manufacture for handling very small quantities, a feature of the latter unit being that instead of being skimmed off the froth is sucked off by a vacuum pump.

A laboratory-size table is used for some investigations and is arranged in such a way that it will give results similar to those obtained from full-size machines. The table has a vibrating dry feeder and is equipped with a pump which can be used either as a wet feeder or to recirculate a middling.

A hydraulic classifier has been developed at the laboratory and is fed by a Mono pump feeder of special design, in which material is sucked from the bottom of the feed tank and returned to the top, all particles thus being kept in circulation. A constant flow of water runs through the classifier, the incoming water being metered. The size of the particles is controlled by the velocity of the flow. A pneumatic cylinder and two time-clocks control the rate of discharge.

The mineral dressing laboratory is at the service of prospective purchasers of plant and machinery, all investigations being treated as confidential.



At left, a concentrating table. Above, a Humphreys spiral concentrator

ONE of the first concerns of the Commissariat à l'Energie Atomique (C.E.A.), since its creation in 1945, has been to ensure the systematic prospecting of the soil of metropolitan France and that of the Union Française for nuclear combustible materials, and the result of this has recently been published in the form of production figures for these materials.

This official search for nuclear combustible materials was progressively intensified within the framework of the Direction des Recherches et Exploitations Minières (D.R.E.M.) of the Commissariat, while private prospecting was greatly encouraged notably by the provision of technical advice, by probationary studies and by a remunerative guaranteed purchase price in respect of minerals discovered.

So far, metropolitan mineral resources can be estimated at between 50,000 and 100,000 tons of uranium, of which 10,000 tons has already been confirmed by direct investigations in the form of headings or drillings, the remainder representing either deposits beneath those already confirmed or in deposits of which a close study has not yet been made but which present similar features to deposits that have previously been encountered.

In Madagascar, the present known resources are of the order of 1,000 tons of thorianite of a quality of about 10 to 20 per cent content of uranium and 60 to 70 per cent thorium. Prospecting in other overseas territories has not yet yielded any exploitable deposits. These are being developed in the Sahara, in A.E.F., in A.O.F. and in French Guiana.

Some 137,000 sq. km. of land in all have been prospected and this figure includes neither the work done by private individuals or companies, which is still of relatively small importance, nor aerial prospecting which is still in its infancy but which will make possible an extension of reconnaissances in overseas territories, notably in the Sahara, where nearly 50,000 sq. kilometres have already been surveyed from the air with some success.

The first investigations by C.E.A. were carried out in 1946 at Lachaux (Puy-De-Dôme), at Saint-Symphorien-de-Marmagne, at Grury (Saône-et-Loire), in Madagascar, in A.E.F. and in A.O.F. This initial work was followed by the development of the main investigations in metropolitan France, which were extended some time afterwards to include Limousin and this led to the discovery of the first pitchblende measures in 1947 and 1948 in the La Faye deposits near to Grury and at Crouzille.

Encouraged by these results prospecting in all favourable zones was developed. At the same time, the previously noted deposits at Lachaux were developed yielding formations interesting as to their tonnage, while it was found that the Henriette deposits at La Crouzille were not the only ones in the Limousin area.

It seemed possible that the Massif-Central might constitute an interesting uranium field and it was on that premise that prospecting there began to be carried out systematically and extensively and investigations at Vendée in 1950 yielded results sufficiently satisfactory to add, in 1953, a fourth division to those already created at Lachaux, Grury and La Crouzille.

Although the old 1929 concession at Lachaux is now practically exhausted, uranium from this field enabled C.E.A. rapidly to make available the first quantities of uranium for the first French experimental piles. Early in 1954, however, a new deposit was discovered in the region of Bois-Nois about 20 km. south of Lachaux in Le Forez. Above the 200 m. level an important accumulation of pitchblende was found and deeper soundings proved that there were interesting, if less spectacular, deposits of nuclear materials and it was expected that this would become important in the near future. More recently further indications of deposits have been discovered about 100 km. south of Lachaux in Le Forez massif to the south-east of Ambert and were being further investigated.

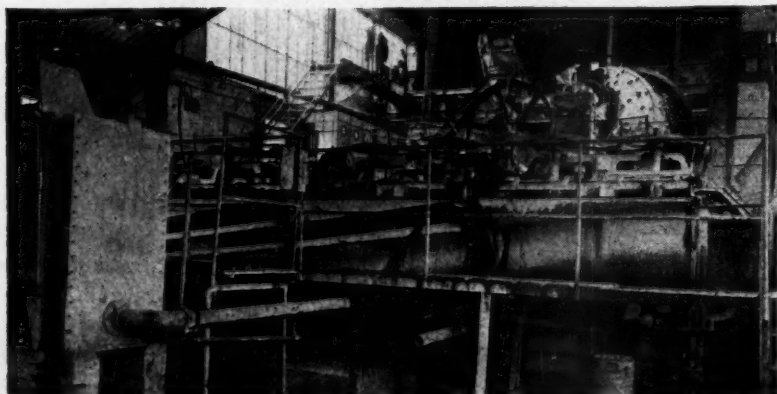
As in the case of the Lachaux deposits, those at La Crouzille in Limousin helped to provide material for the first French nuclear piles, the initially discovered forma-

Uranium

tion at Henriette having shown remarkable continuity. In the same region, between Ambazac and Bessines, other deposits have been discovered, the most interesting of these being those at Sagnes, Margnac and Brugeaud.

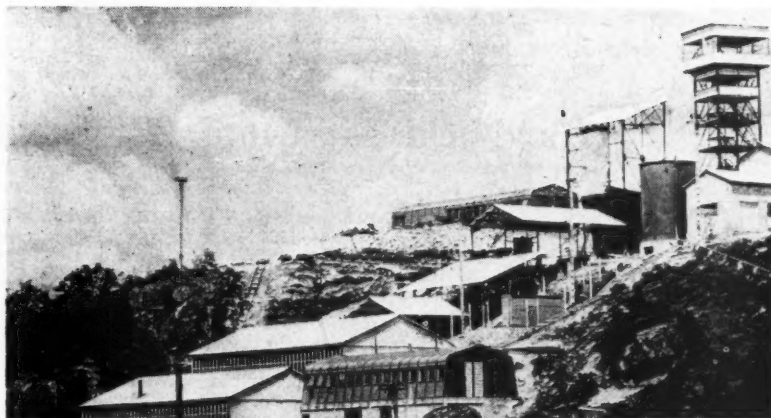
After the first disappointment at Saint-Symphorien-de-Marmagne, in the Grury (Saône-et-Loire) division, a deposit of medium importance and low grade, located at Bauzot, near to Issy-l'Evêque was exploited. Other deposits have been found at La Faye, Les Brosses and in the region of Châteauneuf-Chinon.

Two interesting discoveries have been made in the Vendée, the most recent of the four divisions created for the reconnaissance and exploitation of nuclear combustible materials in France. One is near Clisson and the other is near Mortagne-sur-Sèvre. At least one of these is expected to be of some importance though the quality of the material discovered is low and its exploitation will not be possible except with the use of a chemical treatment plant. Good



The washing plant at Lachaux, showing the crusher and flotation cells

The uranium plant at Bessines-sur-Gartempe (Haut-Vienne)



results, though less regular than elsewhere, have also been obtained in the Herbiers region of the Vendée division.

Following a disappointing start in Madagascar and the subsequent exhaustion of the economic sections of the Antsirabé deposits, thorium was discovered about the middle of 1953, in the south-east of the Grand Ile, near to

in France

Fort Dauphin. The thorium potential here is deemed considerable and that of uranium is thought to be as great as the best deposits in metropolitan France. In this area, the C.E.A. is not only exploiting its own mineral leases but has an arrangement with existing private lease-holders to purchase from them any materials produced on the basis of prices fixed by agreement through the High Commissioner for Madagascar. From Madagascar is expected to be obtained sufficient uranothorianite material to warrant the equipping of a treatment factory at Bouchet.

Extensive investigations in the Niari basin of A.E.F. having yielded negative results, prospecting has since been undertaken in various other territories of the Union Française, including Hoggar, Algérie, Maroc, Adrar des Iforas, Air en A.O.F., Cameroun, Tibesti, Oubangui, Gabon en A.E.F.

The successful discovery and exploitation of nuclear resources, especially in metropolitan France, is attributed to the employment of a systematic method of prospecting.

By John Grindrod

In 1955, the operating personnel of C.E.A. included 13 senior officers, 105 exploitation and geological engineers, 107 prospectors, 163 managing agents, 90 staff and 2,338 workers of whom 1,031 are employed on missions overseas. The total budget allowed to the C.E.A. for this purpose in that year was Fr.4,430,000,000.

Up to December, 1956, one ore concentration plant had been completed and this, administered by C.E.A., was

located at Gueugnon (Saône-et-Loire). Capable of treating 50,000 tons of ore a year, this plant, placed in operation in 1955, has a capacity, in uranium content of uranates, of 300 tons a year, dealing with ores of 1 to 8 per cent grade. Also under construction at that date was a plant at Ecarpière (Loire-Infér.) capable of treating 300,000 tons of ore a year and of producing 400 tons per annum, in terms of uranium content of uranates, from 1.1 to 1.5 per cent grade ore. A further plant was under construction at Bessines (Haute-Vienne) capable of treating 200,000 tons of ore a year and of producing 450 tons per annum, in terms of uranium content of uranates, from 1.1 to 2.5 per cent grade ore.

Actual estimated production for 1957 is 380 tons of concentrates with 60 per cent uranium content, 300 tons of uranium metal of nuclear purity and 300 tons of nitrate of thorium of nuclear purity.

Capital invested by the C.E.A. (D.R.E.M.) in projects for the mining of nuclear materials was, up to December, 1956, of the order of 12 milliards of francs, to which must be added that invested by private companies or individuals to obtain the actual French total. Ore concentration plants, completed or in the course of construction, represented 4 to 5 milliards of francs, while the factory at Bouchet, which has been built for the treatment of uranothorianite, and which is being extended, represents an investment running into 2.7 milliards of francs.

The cost of production of ore concentrates by C.E.A. is at present around Frs.12,000 per kilo of uranium. The uranothorianite treatment process at Bouchet costs Frs.5,000 per kilo of uranium. Current developments are expected to result in a reduction of these costs in a few years and something like Frs.10,000 per kilo for concentrates and Frs.4,000 per kilo for uranothorianite are expected to be attained.

By 1975, a production of about 3,000 tons of uranium a year is envisaged, most of this coming from metropolitan France. Taking into account possible delays in the supply of equipment, the rate of production increase up to 1975 is estimated as follows: 500 tons a year in 1958; 1,000 tons a year in 1961; 2,500 tons a year in 1970; and 3,000 tons a year in 1975. In addition to the 20 milliards of francs already invested in the various sections of the French uranium production industry to date, this expansion programme is expected, on first approximation, to call for a supplementary amount of around 60 milliards of francs. These investment programmes will, however, be re-examined in the light of the European atomic co-ordination. To realize such expansion programmes, some 7,000 persons, or nearly three times the present personnel are expected to be required, including 400 engineers and 1,000 managers.

Machinery and Equipment

Hand-held Air Motor for Small Winches

The advantages accruing from the operation of small air hoists as opposed to manually-operated gear lie chiefly in the speed and safety with which the hoist operation is carried out. In many instances, however, a winch may be used only at infrequent intervals and here its use may not warrant the expense of installing an air motor or the acquisition of portable yet bulky air winches.

For the operation of small hoists the Consolidated Pneumatic Tool Company have produced the 350 R. air motor which weighs only some 56 lbs. The tool operates on an air pressure of 100 p.s.i. and air consumption is rated at approximately 150 cu. ft. per min. Square adaptors are provided for connection to the winch.



Using this tool it is possible to provide a light hand-held source of power for any number of winch installations, thus considerably speeding operations through reducing lifting time by 90 per cent.

SCIENTIFIC ROOF CONTROL

The new Dowty Dynamometer—the latest hydraulic aid to scientific roof control—provides a simple and speedy means of obtaining precise information regarding physical characteristics of roof and floor at the working face. The new device tests roof and floor strengths, and measures the degree of penetration under various loads. It also measures roof loading variations during face operations, and facilitates accurate observation of roof convergence.

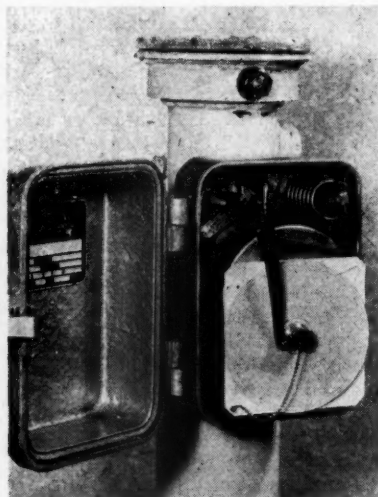
The Dynamometer is basically a special hydraulic prop incorporating a fully automatic recording device which keeps a continuous record of roof loadings on a

time-based chart. Below at right is shown the alternative dynamometer with pressure gauge in place of the automatic recorder unit. Below, centre, is shown an automatic pressure recorder fitted to Dowty standard dynamometer

time-based chart. A scale, pointer and sighting tube form part of the equipment and provide for easy and accurate measurement of convergence and penetration, while the chart provides a complete record of roof loadings during the test period.

The unit is quickly and easily set to a yield load of 20 tons by operation of a built-in hand pump, and is released simply by a pull on the hinged "D" link under the top cap.

Roof convergence is measured on a flat scale clipped to the upper member. The

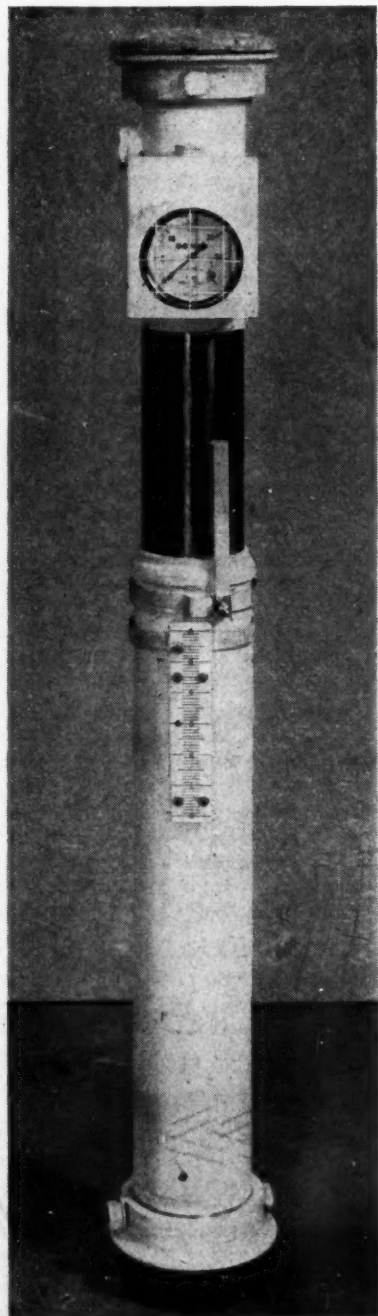


scale is graduated in inches sub-divided into tenths and is read by means of a pointer clipped to the lower member. Once set up on the face, the Dynamometer requires no further attention. Convergence readings can be taken at any time, and roof loadings ascertained from the recorder chart, which provides a permanent record for future reference and comparison.

To measure floor penetration, the scale is repositioned on the lower member, and the sighting tube is secured to an adjacent prop by means of its adjustable chain clamp. Comparative readings are readily obtained simply by looking through the slotted end of the tube in which a small pointer indicates a position on the scale. Roof loadings are again plotted by the recorder.

The simple method of attaching the automatic recorder unit provides a fully self-sealing joint, yet allows the unit to be easily and rapidly detached or re-fitted. Each chart is calibrated for a 24-

hour period, and its special waxed surface eliminates the need for ink—a metal stylus scribes a fine line on the chart by removing the wax to expose the red under-surface. The recorder case in-



At left, above, is the Consolidated Pneumatic 350 R air-motor being used for the operation of a Welin-Maclachlan winch. Applications of this equipment within the mining industry are obvious

incorporates a spring-loaded catch, secured by a robust lock to prevent tampering by unauthorized persons.

Dowty Dynamometers are available in two basic sizes, each complete with easily-fitted extension pieces to suit various seam thicknesses. A distance piece which may be slipped inside any extension tube provides extra adjustment. Both the upper and lower end caps are easily detachable, caps of 5½ in., 7 in., 9 in. and 11 in. dia. being included in the standard kit to cater for differing floor conditions. A pronged cap is available as an optional extra, as well as five penetration pieces of diameters between 1 in. and 5 in.

MODIFIED CORE DRILLS

Recent modifications to the Joy 12-B and 22HD Core Drills have increased the versatility of these machines, produced by Joy-Sullivan Ltd. The principal change is in the provision of a sliding base. Both drills are now mounted on rigid sub-frames, which also carry the driving engines and the complete

type XW, will shortly be available, designed to accommodate the new "W" series drill rods. The head can take E, A, B, and N and EW, AW, BW and NW rods, as well as EX, AX and BX casings by changing the chuck jaws and quill bushings. Facilities are available for three final drive speed ratios of 1 to 1, ½ to 1, and ¼ to 1 for use with large diameter bits requiring lower rotational speeds.

HAND-OPERATED JAW CRUSHER

A hand-operated jaw crusher, specifically designed to deal with small, occasional samples where the installation of a power unit is not warranted or where sampling may be carried out far from suitable sources of power, has recently been introduced by Knapp and Bates, Ltd.

This unit, constructed of aluminium alloy wherever possible, has been produced as a lightweight crusher, capable of being easily portable by one man and of reducing material from 1½ in. cube down to ¼ in. at the rate of 40-45 lb./hr. The

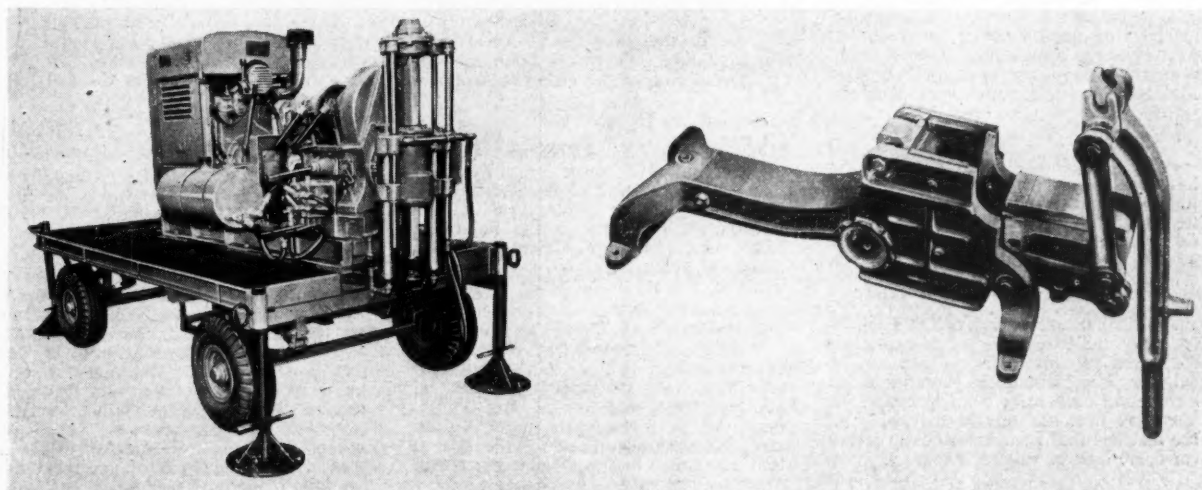
RANGE OF ROCK DRILLS

The considerable service given to the mining industry by those equipments—in particular drills—fabricated by the Climax Rock Drill and Engineering Works Ltd., is well known. Recent pamphlets from the manufacturers give interesting details of the range.

The RV.237 hand hammer drill—one of the well-known range of Climax RV drills—is designed for drilling up to 10 ft. deep in medium to hard rock. It is an ideal machine for pop-holing in quarries, and for contracting work.

The compression-thrown RV valve is neatly housed at the rear end of the cylinder bore and its smooth-running characteristics considerably ease the handling of the drill. The valve is well-protected by the valve chest against damage and can be removed as a complete unit for maintenance.

The Climax R.V.238 Hand Hammer drill was designed with its air inlet on one side of the cylinder to suit coal mining requirements. The drill is fitted with a special attachment between the spade



hydraulic systems, so arranged that they can slide on the main base to provide a retraction of six inches from the drilling position.

This feature means that large diameter core barrels can be used and it allows for the insertion of casing in the large series range. Retraction is effected by a hydraulic ram controlled by an additional valve on the hydraulic system, so interlocked that it cannot be operated during actual drilling. When in the drilling position the frame is clamped rigidly by six bolts between the sub-frame and the main frame.

All drills mounted on Joy-Sullivan standard bases are now fitted with the retractable feature. These are the heavy duty skid, lightweight skid (on 12-B) or four-wheeled trailer. Brackets are also available for mounting the drills on a vehicle chassis.

Both the 12-B and the 22HD drills have built-in, closed circuit, high pressure oil circulating systems, with chain driven heavy duty oil pump, hand-operated control valve and pressure gauge. The drills may be powered by diesel, petrol, or compressed air engines, or by electric motor.

A new universal hydraulic swivel head,

unit consists of two manganese steel jaws, one of which is fixed, the other being hinged at its base and coupled at the top to a handle or lever of malleable iron. For cleaning, this lever is arranged to fold back over the moveable jaw, thus giving clear access. Jaw setting is controlled by a cast-iron hand wheel and spacer bolts and locking cam are of mild steel.

Hitherto, in field work, reduction of samples has called for laborious hand spalling with consequent risk of loss of sample by the scattering of "chats", a method also calling for close supervision. With the new hand-operated jaw crusher, risk of loss by flying particles is eliminated, labour requirements are considerably reduced and a greater production per man is possible without supervision.

In laboratory work, the new crusher meets a strong demand for a unit which may be installed to deal with occasional samples, without tying up the greater expenditure incurred with the installation of a powered unit.

handle and the air inlet so that it may be placed against the shoulder for work in collieries. The air inlet has been suitably reinforced to take the additional strain which results from the shoulder method of holding the drill.

The R.V.238 embodies the Climax RV type valve, a smooth-running unit. When maintenance becomes necessary, the valve can easily be removed as a complete unit. Although the RV.238 was originally designed for use in coal mines, it is claimed to be equally satisfactory for drilling holes of up to 8 ft. in medium rock.

The RV.238 is available for either dry or wet drilling. The RV.258 Hand Hammer drill is a powerful rock drill which is suitable for work in all kinds of hard rock. Suitably mounted, the RV.258 is invaluable as a light but exceptionally fast drifter.

Wet or dry versions of the RV.258 are available, and anvil block types can be supplied to special order. A wet, vented version is also available.

Above at left is the trailer-mounted version of the Joy 12-B core-drill. At right is the Knapp and Bates hand-operated jaw crusher

MINING MISCELLANY

The new town at International Nickel's nickel development project in Northern Manitoba is to be named Thompson, in honour of Dr. J. F. Thompson, chairman of the board, who in 1956 completed 50 years of service with I.N.C.O.

★

A recent survey of iron ore deposits at Manara in Upper Galilee has indicated the existence of reserves amounting to 40,000,000 tons with an iron content of 27-28 per cent.

★

Alcan has acquired the extrusion plant of Pacific Coast Aluminium Ltd., at Richmond, B.C. The plant is to be enlarged and a new aluminium wire and cable plant added for the fabrication of rod, wire and electrical transmission conductors.

★

American Smelting and Refining Co. has acquired Enthone, Inc., manufacturers of metal finishing materials and electroplating equipment. The acquired company is to be known as the Federated Metals division of American Smelting and Refining.

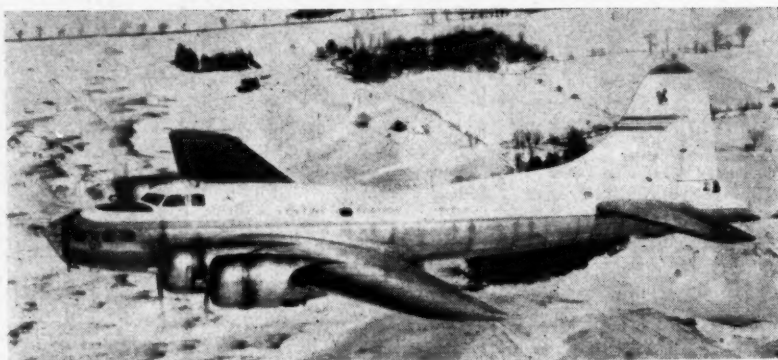
★

A company known as Vulcano, S.A., has been formed with joint Ecuadorean-Italian capital to set up the first iron and steel works in Ecuador. It will begin by using scrap iron and steel available locally and later will prospect for iron ore for its own eventual use.

★

A Brazilian expert has visited Ecuador to study the possibility of re-exploiting the Tixen sulphur mines. Brazil has no sulphur and would be interested in purchasing eventually from Ecuador. A Yugoslav firm has offered to supply all the matches that Ecuador needs in return for 6,000 tons of sulphur annually.

The construction of Venezuela's Guarico Dam demands an earth-filled embankment nine miles long and utilizes the placement of 14,000,000 cu. yds. of borrowed earth. The concrete spillway absorbed 130,000 cu. yds. of concrete placement and 11,000,000 lb. of steel reinforcing frames. A considerable amount of Allis-Chalmers equipment played a key role in this project, particularly HD.21 torque-converter tractors



This high-altitude photographic B-17 and a companion are being operated by The Photographic Survey Corporation of Toronto this summer in Baffinland on the most northerly commercial mapping expedition to be performed by the Canadian Government. Some 40,000 sq. miles of lattice photographic cover are being obtained using Shoran control. This year, P.S.C.'s own mapping aid, the Airborne Profile Recorder, is being used for the first time in such an operation. Aircraft in the operation are being flown by Kenting Aviation Ltd. Installation of the airborne Shoran equipment was by Field Aviation Co. Ltd.

An estimated 38,740,000 tons of iron ore averaging 31.9 per cent iron has been indicated by the first six holes drilled by Continental Mining Exploration Ltd. on its 50-claim property in the Papaonga Lake area, Ontario. Calculations are based on a length of 4,400 ft., average width of 176 ft., and a depth of 500 ft.

★

Production at the Tilt Cove mine of Maritimes Mining Corporation, in Newfoundland, is scheduled to start in September this year, but the date may be improved by revised planning. A contract has been negotiated for the sale of the company's copper concentrate to

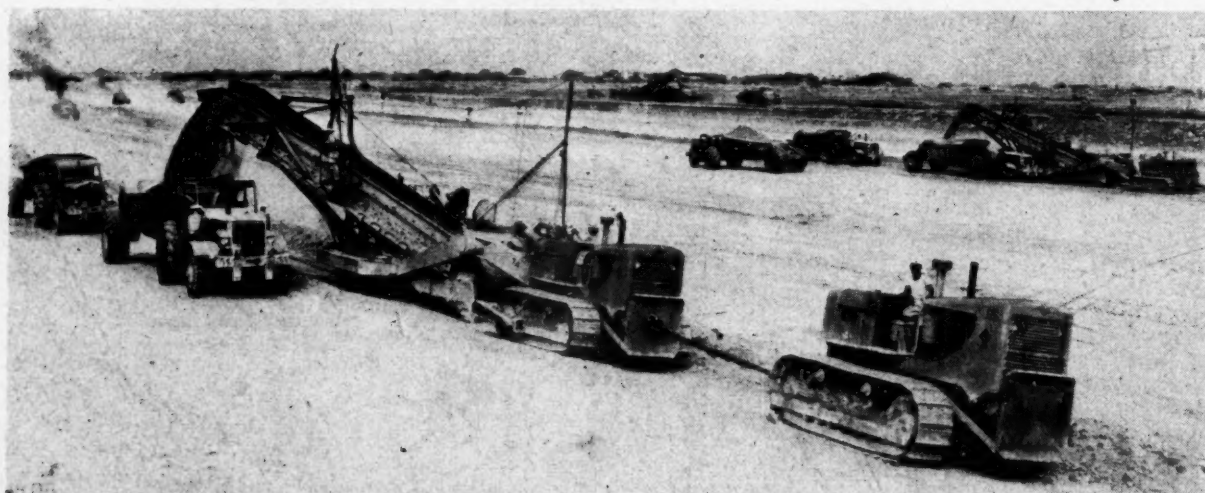
Noranda Mines at the Murdochville smelter over a period of 7 years. Negotiations are proceeding for the sale of pyrite concentrates to be produced later.

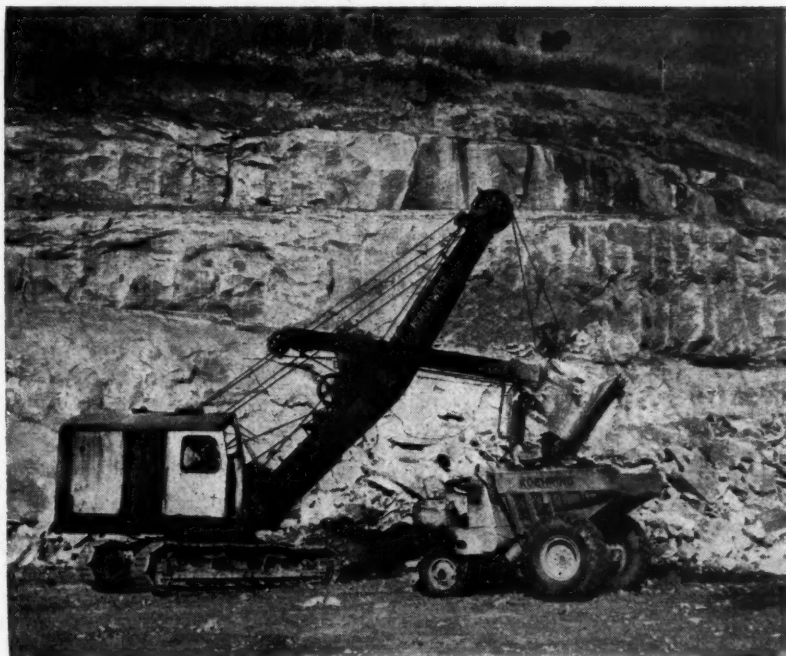
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The mining industry in Pakistan showed steady progress in various fields last year. It registered increases of 18 per cent in the production of coal, 22 per cent in gypsum, and about 10 per cent in silica sand. The most important discovery of the year was the location of natural gas at Sylhet, in East Pakistan. This gas reserve is expected to meet local requirements for about 40 years. The production of gas from the Sui and Dhulian gas fields in West Pakistan last year amounted to more than 10,400,000,000 cu. ft.

★

An agreement recently signed between Poland and East Germany gives the prospect of a rapid development of brown





A North-West shovel and Koehring dumper in operation at the Culeté quarry, in the Minas Gerais Triangle, Brazil. A full description of the mineral resources of the Triangle appears on page 749 of this issue

coal mining in Poland. Work will shortly begin on the Great Turów mine, Wrocław Province. The present yield here is 5,000,000 tons annually, but within ten years, with the reconstruction of the existing open-cast mines and the construction of a second, production should reach 25,000,000 tons per annum (by 1964). Near Konin, another big lignite mining centre will be built. Here there will be three open-cast mines with a total annual capacity of 10,000,000 tons. The brown coal thus exploited will serve the power industry, which at present runs with a deficit in the region of 400 MW. The ultimate economy in hard coal will amount to between 10,000,000 and 12,000,000 tons.

E.10, have appointed H. B. Rayler and Co. Ltd., of Thomas Street Works, Hull road, York, and Victoria Street, Newport Road, Middlesbrough, as agents for the sale of "Jenbagh" portable diesel air compressors.

CONTRACTS AND TENDERS

The International Co-operation Administration (I.C.A.) have announced the following procurement for Ceylon: 25 air-operated rock drills. Project Implementation Order No. 83-12-003-9-70030 (Inv. No. 22). Closing date, 30/7/57.

Bids to the Chairman, Tender Board, Ministry of Lands and Land Development, Secretariat Buildings, P.O. Box 500, Colombo, Ceylon. Copies of tender documents available from the offices of the High Commissioner for Ceylon, 13 Hyde Park Gardens, London, W.2. B.O.T. ref.: E.S.B./13554/57/I.C.A. Telephone enquiries to Chancery 4411, extension 30.

Metropolitan-Vickers Electrical Co., Ltd., has received an order from the National Coal Board, N.E. Division, No. 4 (Carlton) Area, for a large electric winder to be installed at Grimethorpe Colliery. The value of the contract is approximately £157,000. The winder will be of the conventional type with a single cylindrical drum 18 ft. dia. and 14 ft. wide. Geared drive will be by twin d.c. motors with a combined rating of 2,700 h.p. (R.M.S.) which will have automatic Ward-Leonard control on the closed loop Lamex system. The mechanical parts of the winder will be manufactured by Vickers - Armstrongs (Engineers), Ltd., acting as sub-contractors to Metropolitan-Vickers.

The Brush Group has recently secured six important contracts in British Columbia. They include generator units for the Kelly Logging Co., Ltd.; generator sets for Trans Mountain Oil Pipe Line's pumping stations; power transformers for the B.C. Power Commission, and stand-by power plants for the B.C. Electric Co. Last year the Group's Canadian business totalled \$5,000,000.

PERSONAL

At the Annual Convocation of the University of Manitoba on May 22, the honorary degree of Doctor of Laws was conferred upon Mr. Henry S. Wingate, president of International Nickel.

Mr. M. W. Parish has been appointed a director of Nigel Van Ryn Reefs.

Chamberlain Industries Ltd., of Staffa Works, Staffa Road, Leyton, London,

The British-made International Drott Skid-Shovel, which has already created sales and production records for this type of equipment, has now made news in Malaya. Recently, the Public Works Department at Kuala Lumpur purchased twenty-five of these tractor-shovel units at one time for use on various development projects. United Engineers Ltd., IH distributors who supplied the equipment, state that, with the Drott Skid-Shovels, there are now over fifty British-made International LTD-6 crawler tractors in use in Malaya, in quarries, opencast tin mines, an iron mine and sundry projects



Metals and Minerals

Rutile Has Boiled Over

The outlook for rutile was discussed in our issue of November 30, 1956, in which doubts were expressed as to whether world demand was capable, in the short-term, of absorbing Australia's rapidly-expanding production. These misgivings, unfortunately, have proved only too well founded, for rutile has boiled over and, at the time of writing, it is still cooling off.

At the end of November Australian rutile of minimum 95 per cent was quoted in London at £95 per ton c.i.f. Prices have since trended persistently downwards and now range from £58 to £61 per ton. Despite this steep fall, a further easing would occasion little surprise, since supplies are plentiful and as yet demand appears to be showing no signs of revival.

This situation enhances the interest of a survey of Australia's beach sand industry in the May, 1957, issue of the quarterly review, *Australian Mineral Industry*. Whether the expanded capacity—now placed at between 150,000 and 180,000 tons—will be fully used in 1957 is regarded as doubtful. However, slowness of some mines in other countries in getting into production is helping Australian exports, and the opinion is expressed that the total for the year could exceed 120,000 tons.

The article states that zircon demand, which increased during 1956 with improvement in price from £13 to £20 a ton, has also slackened off, though quotations for material of 65-66 per cent quality are still in the region of £20 c.i.f.

The ilmenite industry in Western Australia, which came into production at the end of 1956, already shows evidence of following the same pattern as rutile—rapid prospecting for deposits, plans by many intending producers new to the industry, little detailed co-ordinated examinations of the international market. It is pointed out that, if production is overdone, the position of the more solid producers with worthwhile plans could be weakened. The profit margin for ilmenite is small enough, but fortunately the world market is on a far bigger scale than for rutile, and the effect on price of rapidly-increased production cannot be so drastic.

It is considered that Australian producers of rutile, zircon and ilmenite should continue to look to established usages for their main permanent markets—rutile for welding rods, zircon for ceramics and refractory purposes, and ilmenite for titanium white pigment. The requirement of either Australian rutile or ilmenite in permanent large quantities for titanium metal production is still some years off. The use of hafnium-free zirconium for nuclear reactors is virtually confined to the U.S. Since hafnium is a by-product of treatment, a high hafnium zircon would be preferred for processing. Between Indian, American and Australian (East Coast) zircon, Australian has the lowest hafnium content (1.7 per cent) and India the

highest (5.7 per cent). Hence Australian zircon might not have preference. In any case, on present programmes the amount of zircon required for this purpose would represent only about 2 per cent of world production.

U.S. MANGANESE SUBSIDY ?

Rep. Wilbur D. Mills of Arkansas, a member of the Ways and Means Committee, has introduced bills to encourage continued development of manganese deposits in the U.S. He asked for early consideration and passage of this legislation until an effective long-range programme for domestic manganese had been worked out and approved by Congress.

"We normally consume about 2,400,000 tons of manganese ore a year," said Mr. Mills. "We process 10-12 per cent of our needs in mines within the U.S. and import about 90 per cent, mainly from India, Africa and Brazil. We have abundant domestic manganese resources in the form of low-grade ore. We have suitable processes for recovery of a high-grade product. It takes time and money to develop deposits and install plants to upgrade the ores. To justify continued mine developments and investments in plants, domestic producers must be given assurance of long-range government policy and markets for a sufficient length of time to enable them to get their money back."

*

Three bids have been received by the local office of General Services Administration for purchase of the Diamond magnesium plant in Painesville, Ohio. Two bids were submitted by Wheeler Chemical Corporation and one by Kaiser Aluminium and Chemical Sales Corporation. It is believed that all three bids will be rejected, either as being too low or as having unacceptable conditions.

Dow Chemical submitted a top bid of \$19,370,000 for the Government-built magnesium plant at Valasco, Texas, which it now operates under a lease expiring in January, 1958. The agency has 60 days to study the proposals and the transaction will have to be approved by the Defence and Justice Departments.

The world's largest magnesium extrusion press recently went into operation at Dow's rolling and extrusion mill at Madison, Ill. Its 13,200-ton capacity and 250-ft. length dwarf any press previously used to extrude magnesium. It can convert magnesium alloy ingots weighing as much as 2,000 lb. into extrusions up to 80 ft. long. The most promising field for big extrusion is in aircraft and guided missile structural members, particularly hollow tubing for missile bodies.

*

The Government of India has decided to continue the system of quota-licensing of manganese ore for export for the period July, 1957-June, 1958. Movements

and shipment quotas will be given to shippers and mine-owners, equal to 60 per cent of their exports in 1955 or 1956—the year to be selected by them. Quota holders will be required to utilize at least 60 per cent of the quotas issued to them for export of manganese ore containing 42 per cent manganese and lower. Export of low-grade manganese ore will continue to be licensed freely on production of foreign sales contracts. From July 1 an increased share of manganese ore exports, as well as all shipments of iron ore, are to be canalized through the State Trading Corporation.

Three upgrading plants for improving the quality of manganese ore of low grade are shortly to be set up in India as a joint venture of private enterprise and the public authorities. The plants will raise the present grade of 30-38 per cent to 46-48 per cent. Trade sources say it has become imperative to set up these plants because foreign consumers have been fighting shy of low-grade Indian ores. It has been further stated that offers have been received in London from the Indian State Trading Corporation, which infer a condition of sale of taking high grade as well as low grade material.

The Egyptian Ministry for Industry has granted permission to a newly-incorporated Egyptian concern, with a capital of E£80,000,000, to extract manganese ore in the region of Elab, in southern Egypt.

BLUE AND AMOSITE

At the annual meeting of the Cape Asbestos Co. Ltd. the chairman, Mr. Robert Walker, said that the difficulties encountered in the last two years in the mining and treatment of Blue and Amosite fibre were still a source of some anxiety. In the Blue Asbestos fields, however, the company's major problems had been surmounted. Production had increased and was steadily increasing. The continued maintenance of a high standard of quality of treated fibre was of prime importance to the company, and more scientific methods of both mining and treatment were constantly being introduced.

In the Amosite fields, which are operated by the Cape Asbestos subsidiaries, Egnep Ltd. and Amosa Ltd., 1956 was not a happy period, but since the turn of the year there has been a very marked improvement. Production was handicapped by a number of mining and physical difficulties and a sharp increase in costs was experienced. This situation was the result of a transition stage from relatively simple adit level operations to mining at deeper depth, with attendant problems of pumping and ventilation. After a careful geological and mining survey, the South African board has decided that a vertical shaft should be sunk to provide an adequate means of access to the mine, which will enable development to be carried out on an increased scale.

BISMUTH IN 1956

U.S. domestic consumption of bismuth metal in 1956 exceeded 750 s.tons and remained virtually unchanged from 1955, according to the Bureau of Mines. Fabricating alloys required 72 per cent of the total used, pharmaceuticals accounting for the remainder. World production was estimated to have increased to 2,250 s.tons, compared with 1,900 tons in 1955.

Stocks of metallic bismuth held by consumers and dealers in the U.S. on December 31, 1956, decreased 3 per cent under the 117 s.tons on hand at the beginning of the year. Producers' inventories of refined metal, however, increased substantially. During 1956, general imports of bismuth metal were 462 tons—a 55 per cent gain over 1955 and the highest on record. Of the total received, the U.K. supplied 43 per cent (none in 1955), Peru 35 per cent, and Mexico 13 per cent. Canada, Yugoslavia and the Netherlands supplied the remaining 9 per cent.

The quoted market price of metallic bismuth in New York remained throughout 1956 at \$2.25 per lb., in ton lots, unchanged since September 5, 1950. In Britain, except for a couple of months last year, the quoted price of bismuth has remained conspicuously stable since September 28, 1953.

TURKISH CHROME ORE

The barter of Turkish chrome ore for U.S. agricultural surpluses, including wool and other commodities, has finally been completed. It involved about \$10,000,000 worth of chrome ore against \$5,000,000 worth of wool and \$5,000,000 of other goods. Attempts to complete this transaction had been made over the past year. The recent rules for barter do not apply to it because negotiations actually started in mid-1955. This is the reason why the deal was approved, despite the fact that the Agriculture Department had temporarily suspended the barter programme. The contract will include about 175,000 tons of chrome ore, plus or minus 30,000 tons.

GERMANIUM PRICE CUT

Reductions of about 10 per cent in the prices of pure germanium metal and germanium dioxide, effective immediately, have been announced by Sylvania Electric Products Inc. Sylvania refines germanium from raw material containing comparatively low percentages of the element. It is one of the two largest manufacturers of pure germanium metal and germanium oxide in the U.S.

TITANIUM PRICES CUT

Titanium Metals Corporation of America has reduced prices by an average of 10 per cent on many titanium mill products. This represents the sixth general mark-down in prices since 1954. The cuts are attributed to technological advances coupled with sustained capacity operations. Following these reductions, the Du Pont Co. announced that it had reduced the price of its titanium sponge by 50 c. per lb., with retrospective effect to June 3. This represents a cut of about one-fifth in the price of the metal, which

previously was quoted at \$2.50-\$2.75 per lb. for 99.3 per cent material f.o.b. Beverly, Massachusetts. It is anticipated that lower sponge prices will broaden the market for titanium.

Mill products makers in the U.S. have reported some slackening in demand from the aircraft industry. They attribute this to budget cutting by Congress and a reshuffling by the Defence Department in procurement to reflect production of guided missiles.

Because of uncertainty over the amount of titanium sponge the U.S. will purchase this year, the Japanese titanium refining industry has been obliged to modify its proposed expansion programme. Under this programme production was to have increased to a level of 4,382 tons annually by March, 1958, compared with 2,957 tons in 1956. Other reasons given for curtailment of the expansion programme were that the Japanese Government had decided to remove tax exemption on titanium exports and that prices of titanium sponge in American markets were likely to decline.

Scientists at the Armour Research Foundation of the Illinois Institute of Technology have developed a new process to make titanium tetrachloride with a higher purity and at less cost than by the present method. Titanium tetrachloride, besides serving as raw material for the refined metal, has other important uses. For example, it serves as a source of organic titanium compounds and paint pigments. The process may open up new uses for ilmenite as a starting material in the production of titanium metal.

Japan's biggest chemical engineering firm, Ishihara, has applied to Ceylon's Ministry of Industries for an option to purchase Ceylon's entire ilmenite output from Pulmoddai at competitive prices. Japan at present gets her supplies of ilmenite chiefly from Malaya and Australia.

Plans for mining titanium minerals on Amelia Island, about 30 miles N.E. of Jacksonville on the Florida Coast, have been announced by Union Carbide and Carbon Corporation. Mining will be

done by a bucket-ladder dredge that can handle about 500 tons of sand an hour. The sand will be wet-concentrated on the dredge hull itself.

BAUXITE AND BILLITON

Bauxite is expected to loom increasingly large in the Billiton company's activities, shareholders were told at the annual meeting. Though tin remains Billiton's most important product, bauxite is expected eventually to take the lead, while the importance of columbite is also likely to increase. The Surinam bauxite undertaking is expected to become profitable in the course of the current year and it is hoped that output will reach 1,250,000 tons per year by 1960. The company is confident that the increased bauxite production in Surinam will find a remunerative market, especially in the U.S. and Canada.

Bauxite deposits estimated at 5,000,000 tons with a 40 per cent alumina content have been discovered near Dschang in the French Cameroons. The construction of the Péchiney-Ugine aluminium plant at Edea, fed with French bauxite, stimulated the search for local supplies that led to the latest discovery. Plans to move the ore 20 kilometres by air to the Mbos valley, where a processing plant could be built, are reported to be under investigation.

At the annual meeting of Péchiney the chairman, M. Rene Piaton, said that negotiations for the erection of a 50,000/60,000 ton aluminium plant using gas as power had reached their final stages. The plant, which will be situated at Lacq (south-western France) might start production in 1960. It will be the stopgap until the vast African projects, which require thorough studies and difficult negotiations, become effective.

No early settlement is expected of the strike at the Arvida works of Alcan in Quebec Province. It has been stated, however, that there will be no shortage of aluminium during the strike.

COPPER • TIN • LEAD • ZINC

(From Our London Metal Exchange Correspondent)

In the absence of any developments of a "bullish" nature the downward tendency in values has continued on the London Metal Exchange.

With the intervention of the Whitsun holiday, trading as reflected in the daily turnovers has been on the quiet side, with the exception that a fair volume of zinc changed hands in London at the end of last week. The only noteworthy price change has been a 1 c. reduction in the New York lead quotation to 14 c.

COPPER CONTANGO WIDENS

The copper market in London has again found buyers reserved and as such the quotation here has drifted lower. There are still no signs of consumers entering the market for anything more than their minimum requirements and at

the same time the influential buying support which was mainly responsible for holding the price last month has again been lacking. Until such time as there is a change in either or both of these factors, and with the approach of the holiday season it is difficult to avoid the conclusion that the market will reach a lower level. Meanwhile there has been a widening in the contango to fully £2, as a result of a further increase in stocks in L.M.E. official warehouses for the week ended June 8, of 1,300 tons, bringing the total up to 9,747 tons.

There have been two strikes during the past week in the Rhodesian Copperbelt both affecting R.S.T. Group properties. Last Friday 1,000 European daily-paid workers at Mufulira commenced a four-day strike because of disagreement as to who should do certain work concerned with ensuring the safety of electrically-

driven equipment prior to repairs. This caused a total shut-down until normal working was resumed on Tuesday, although essential services were maintained. On this day, however, 5,500 African workers at Roan Antelope started a protest strike because a meeting which they had sought with the African personnel manager had been terminated. Full details of the dispute are incomplete and it has not been stated how long the strike is likely to last.

There has been no announcement from the Anglo American Group regarding any cutback in production and there would appear to be no reason to expect any positive action in this respect, at any rate in the near future. It will be recollected that the R.S.T. Group introduced a 10 per cent reduction in output at the beginning of the month. A spokesman for the Belgian mining company, Union Minière du Haut Katanga, stated that there was no reason why they should reduce their output as their production programme was independent of any action taken by other producers.

In the United States, modest activity is reported with both the Customs Smelters' and producers' prices maintained at 30 c. and 32 c. respectively. In view of the continued spread between these two quotations, some sources still anticipate a reduction in the latter price and mention July 1 as a likely date. It will be recollected that the same sources a month or so ago were putting forward a similar suggestion in relation to June 1. Scrap copper is still steady at 24½ c. with dealers not anxious to offer, but the export price has eased to 29½ c. It may be noted here that copper has not been included in the Administration's new long-term minerals programme because, as a spokesman put it, of the "... continued good price and the fact that a 2 c. Excise tax comes into effect when the price falls below 24 c."

TIN QUIETLY STEADY

The recent steady tone of the tin market was disturbed when business was resumed after the Whitsun holiday by the announcement at the close of the International Tin Council meeting in Brussels that the Canadian Government had given the requisite six months' notice that they intended to dispose of about 3,000 tons of tin from their strategic stockpile. At the same time it was pointed out that disposals would only be made if prices obtainable were in line with the cost of the metal. This figure was, of course, not disclosed.

There were already indications of a small surplus of tin during 1957 as a result of an examination of the statistical position which will be increased not only by the tonnage referred to above, but also by the 2,500 tons which the British Government has already expressed its intention to release from their strategic stockpile. In conjunction with these facts it should be noted from figures recently issued that in March, U.S. industry used 7,400 tons of tin, which made the total consumption figure for the first quarter of this year 6 per cent less than in the corresponding period last year.

On the London market the backwardation has tended to widen in spite of stocks in L.M.E. official warehouses being 174 tons up for the week ending June 8 and now stand at 2,018 tons. This represents an increase of nearly three times the figure recorded at the end of April and the belief is growing in many quarters that the Buffer Stock have already taken up certain tonnages from the market.

Exports of tin metal from Malaya in May totalled 6,149 tons against 6,348 tons in April. On Thursday morning the Eastern price was equivalent to £781½ per ton c.i.f. Europe.

LEAD AND ZINC EASE

On further reflection, it seems increasingly unlikely that any definite action can be taken by Congress this term on the Administration's new long-term minerals programme for lead and zinc. Protests against the proposal to introduce sliding scale import taxes on these metals have already been made by four producing countries, namely, Canada, Mexico, Australia and Peru. This fact, coupled with the realization that the many restrictions imposed on the new barter programme whereby surplus agricultural products are exchanged for foreign lead and zinc, apart from complicating the business, will confine it to a fraction of the previous volume, has resulted in further easiness in both the lead and zinc markets.

The U.S. lead quotation had been subjected to a certain amount of pressure in the few days prior to the 1 c. reduction to 14 c. mainly because of the decline in London which enabled foreign lead and zinc to be available to U.S. consumers at no more than 14 c. basis New York. It was also clear that a 4 c. span between the lead and zinc quotations could hardly be maintained.

As regards the future, it is too early to say whether it will be possible to hold the lead price at the new level, but as far as zinc is concerned, demand at 11 c. is still behind output. Meanwhile production cutbacks have been announced by the American Zinc and Lead Smelting Co. which in total will reduce output by approximately 1,500 tons a month.

The American Zinc Institute has issued figures which show that although shipments by producers increased in May by 9,179 tons, stocks at the end of the month also increased by 7,000 tons to 112,775 tons. At the end of May, 1956, stocks were 59,577 tons.

LONDON METAL AND ORE PRICES, JUNE 13, 1957

THE WEEK ON THE L.M.E.

	June 6		June 13	
	Buyers	Sellers	Buyers	Sellers
COPPER				
Cash ..	£233½	£233½	£232½	£232½
Three months ..	£235½	£235½	£234½	£234½
Settlement ..	£233½		£232½	
Week's turnover	5,475 tons		4,050 tons	
LEAD				
Current ½ month	£93½	£93½	£92	£92½
Three months ..	£93½	£94	£92	£92½
Week's turnover	3,050 tons		3,100 tons	
TIN				
Cash ..	£763	£763½	£764	£765
Three months ..	£760	£760½	£761	£761½
Settlement ..	£763½		£765	
Week's turnover	1,255 tons		695 tons	
ZINC				
Current ½ month	£76½	£76½	£74	£74½
Three months ..	£75½	£76	£74	£74½
Week's turnover	8,000 tons		4,775 tons	

METAL PRICES

Aluminium, 99.5%, £197 per ton
 Antimony —
 English (99%) delivered, 10 cwt. and over £210 per ton
 Crude (70%) £200 per ton
 Ore (60%) bases 23s. 6d./24s. 6d. nom. per unit, c.i.f.
 Arsenic, £400 per ton
 Bismuth (min. 1 ton lots) 16s. lb. nom.
 Cadmium 12s. 6d. lb.
 Cerium (99% net), £13 18s. lb. delivered U.K.
 Chromium, Cr. 99% 7s. 2d. lb.
 Cobalt, 16s.-19s. lb.

ORES AND OXIDES

Bismuth	65% 8s. 6d. lb. c.i.f.
	20% 3s. 3d. lb. c.i.f.
Chrome Ore—	
Rhodesian Metallurgical (semifriable) 48%	£17 8s. 0d. per ton c.i.f.
" Hard Lumpy (45%)	£17 8s. 0d. per ton c.i.f.
" Refractory 40%	£12 15s. 0d. per ton c.i.f.
" Smalls 42%	£16 5s. 0d. per ton c.i.f.
Baluchistan 48%	£12 0s. 0d. per ton f.o.b.
Columbite, 65% combined oxides, high grade	185s/197s. 6d. per unit
Fluorspar—	
Acid Grade, Flotated Material	£22 13s. 3d. per ton ex. works
Metallurgical (75/80% Ca F ₂)	156s. 0d. ex. works
Lithium Ore—	
Petalite min. 3½% Li ₂ O	£8-£10 per ton f.o.b. Beira
Lepidolite min. 3½% Li ₂ O	£8-£10 per ton f.o.b. Beira
Amblygonite basis 7% Li ₂ O	£28-£32 per ton f.o.b. Beira
Magnesite, ground calcined	£28 0s./£30 0s. d/d
Magnesite Raw (ground)	£21 0s./£22 0s. d/d
Molybdenite (85% basis)	8s. 5d. nom. per lb. (f.o.b.)
Titanium Ore—	
Rutile 95/97% TiO ₂ (prompt delivery)	£57/£59 per ton c.i.f. Aust'n
Ilmenite 52/54% TiO ₂	£11 10s. per ton c.i.f. Malayan
Wolfram and Scheelite (65%)	142s. 6d./147s. 6d. per unit c.i.f.
Manganese Ore Indian	
Europe (46%-48%) basis 130s. freight plus 5% surcharge	131d nom. per unit c.i.f.
Manganese Ore (43%-45%)	106d. nom. per unit c.i.f.
Manganese Ore (38%-40%)	100d. nom. per unit.
	(including duty)
Vanadium —	
Fused oxide 90-95% V ₂ O ₅	£124-£13½ per unit c.i.f.
Zircon Sand (Australian) (63-66% ZrO ₂)	£19 per ton c.i.f.

Germanium, 99.99%, Ge. kilo lots 3s. 4d. per gram
 Gold, 250s. 11½d.
 Iridium, £27/29 oz. nom.
 Lanthanum (98/99%) 15s. per gram
 Manganese Metal (96%-98%) £310
 Magnesium, 2s. 5½d. lb.
 Nickel, 99.5% (home trade) £600 per ton
 Osmium, £20/22 oz. nom.
 Osmiridium, nom.

Palladium, £8 0s./£8 10s. oz.
 Platinum U.K. and Empire Refined £324/£32½ oz.
 Imported £324/£32½ nom.
 Quicksilver, £91 10s. ex-warehouse
 Rhodium, £42 oz.
 Ruthenium, £13/£17 oz. nom.
 Selenium, 75s. nom. per lb.
 Silver, 78½d. f. oz. spot and 78½d. f'd.
 Tellurium, 15s./16s. lb.

Mining Finance

Adlai Addles Kaffir Boomlet

Adlai Stevenson, last year's Democratic candidate for the U.S. Presidency, said in Johannesburg on Wednesday that Mr. Strydom's policy of total racial segregation did not seem either practical or realistic in a modern industrial State. Mr. Stevenson, who was in South Africa on a business trip representing American businessmen, said he was not certain how American capital would react to the continuation of the present government. The *News Chronicle*, in publishing this information from its Reporter in Johannesburg, went on to say that American financiers had many opportunities for investment nearer home. They usually required not only good opportunities for expansion but they desired to invest their capital where security was good. There was doubt in the United States as to whether South Africa was sufficiently stable politically.

Although Mr. Stevenson does not represent either official thinking or policy in the United States there can be no doubt that what he has said represents how powerful and influential American businessmen feel. This assessment of the South African political scene, coupled with a few columns of sour-grape com-

ment from one of the more vocal national dailies, has taken the steam out of the recent Kaffir boomlet which pushed up the gold share index from 68.2 on June 4 to 74.9 on June 11. Whether the market will remain depressed and sink back into its well-worn trough remains to be seen. Its rise was mainly due to the work of professionals but the fact that marks in the Official List went as high as 1,213 on Tuesday indicated that genuine interest was being aroused.

Originally, the excellent May returns, detailed on page 762 of this issue, provided the stimulus to the market. Additionally, good news has been forthcoming in recent chairmen's statements and when St. Helena intersected the Basal Reef in an orepass yielding 328 dwt. over 18 in., equivalent to 5,904 in. dwt., the market tended to race away.

FINANCE BILL OMISSION

"So far as can at present be seen the provisions of the Finance Bill now before Parliament will in no way benefit this

Corporation," declared Mr. Ivan Spens in his statement to shareholders accompanying the full report and accounts of London Tin Corporation for the eleven months ended March 31, 1957.

This is a pity in more ways than one. Shareholders apart, one of the basic reasons for recognizing Overseas Trading Corporations was to place them in as fully a competitive position as those companies operating in the same country but controlled outside the U.K. The fact that the Finance Bill, as it stands at any rate, does not accord any benefits to mining finance groups deriving their income from subsidiaries, which are managed and controlled overseas, is an omission of such significance that it is difficult to believe that the Finance Bill will not be amended to rectify this anomaly.

Only large and powerful financial organizations are in a position to undertake the costly business of carrying out large-scale mining operations and unless companies like London Tin Corporation secure the same concessions available to those companies recognized as Overseas Trading Corporations many of the advantages intended to accrue to the British overseas mining industry will be lost.

LONDON STOCK EXCHANGE PRICES, JUNE 12, 1957

Finance	Price June 12	+ or - on week	Rand Gold contd.	Price June 12	+ or - on week	Diamonds and Platinum	Price June 12	+ or - on week	Tin (Nigerian and Miscellaneous) contd.	Price June 12	+ or - on week
African & European ..	55 7/8	+1/104	W. Rand Consolidated ..	32/6	+2/3				Gold & Base Metal ..	1/6	-1 1/2
Anglo-American Corp'n ..	6 1/2	+1/6	Western Reefs ..	28/3	+1 1/2	Anglo American Inv. ..	8 1/2	+1/6	Jantar Nigeria ..	3 7/8	-4 1/2
Anglo-French ..	24/-					Casts. ..	28/-	+6d	Jos Tin Area ..	15/3	
Anglo-Transvaal Cons. ..	28/9	+1/3				Cons. Diam. Pref. of S.W.A. ..	10/6	-3d	Kaduna Prospectors ..	2/-	
Central Mining (£1 shrs)	65/-	-1/3	O.F.S. Gold ..			De Beers Defd. Regd. ..	13	+5 1/2	Krduna Syndicate ..	2/6	
Consolidated G'fields ..	54/3	+1/6	Freddies ..	5 1/4	+4 1/2	De Beers Pfd. Regd. ..	13 1/2		London Tin ..	12/-	-4 1/2
Consol. Mines Selection ..	13/9	+1/3	Freddies Consolidated ..	3 10 1/2	+4 1/2	Pots. Platinum ..	14 10 1/2		United Tin ..	10 1/2	
East Rand Consols. ..	11/4	+1/4	G.F. Geduld ..	70/-	+8 1/2	Waterval ..	24/9	-3d			
General Mining ..	58/9	+3/5	Geoffries ..	3/-							
H. E. Prop. ..	8 1/4	+3d	Harmony ..	23/-	+1/3	Copper ..			Silver, Lead, Zinc ..		
Johnnies ..	46/6	+4/6	Loraine ..	4 10 1/2	+1/-	Broken Hill South ..	34/6	-1/-			
Rand Mines ..	70/-	+2/6	Lydenburg Estates ..	14/6	+2/-	Chartered ..	69/3	-1/3	Burma Mines ..	3 1/4	
Rand Selection ..	36/3	+1/104	Merriespruit ..	3 10 1/2	-1 1/2	Esperanza ..	2 1/2	-3d	Consol. Zinc ..	70/6	-3/6
Union Corporation ..	38/-	+3d	Merits Wits ..	10/-	+9d	Magnudi ..	7/9	-10 1/2	Lake George ..	7/6	-6d
Vereeniging Estates ..	4 1/2	+1/6	Odette ..	5 1 1/2	+1/6	Messina ..	7 1/2	-2	Mount Isa ..	27/6	
Wits ..	38/9	+1/3	President Brand ..	50/6		Nchanga ..	11 1/2	-2	New Broken Hill ..	44 1/2	-3 1/4
West Wits ..	32/9	+1/9	President Steyn ..	28/-	+2/3	Rhod. Anglo-American ..	89 1/2	-1 10 1/2	North Broken Hill ..	5 1/2	
			St. Helena ..	28/-	+5/-	Rhod. Katanga ..	30/9	-2/9	Rhodesian Broken Hill ..	9 10 1/2	-10 1/2
			Virginia Ord. ..	10/3	+6d	Rhodesian Selection ..	19/9	+3d	San Francisco Mines ..	23/9	-6d
			Welkom ..	15/9	+6d	Rhokana ..	36		Uruwira ..	2 10 1/2	-1 1/2
			Western Holdings ..	67/6	+4 1/2	Rio Tinto ..	4 1/2	-1/6			
Rand Gold ..		+1/3				Roan Antelope ..	10/6	-3d	Miscellaneous ..		
Blyvoors ..	21/-					Selection Trust ..	5 1/2	-1/6	Base Metals and Coal ..		
Brakpan ..	4 10 1/2					Tanks ..	8 1/2	+1/6	Amal. Collieries of S.A. ..	2 1/2	-1/6
Buffelsfontein ..	32/-	+6d				Thariss Sulphur Br. ..	4 1/2	+1/6	Associated Manganese ..	40/-	-3d
City Deep ..	13 1 1/2	+1 1 1/2	West African Gold ..						Cape Asbestos ..	11/6	-4 1/2
Consol. Main Reef ..	12 1/2	-6d	Amalgamated Banket ..	11 1/2		Tin (Eastern) ..			C.P. Manganese ..	23/-	
Daggas ..	32/6	+1/104	Ariston ..	3 10 1/2	-1 1/2	Ayer Hitam ..	26/-	+9d	Consol. Murcison ..	50/-	+1/3
Dominion Reefs ..	16 1/4		Ashanti ..	20/3	-1 1/2	Gopeng ..	17/9		Natal Navigation ..	3 1/2	
Doornfontein ..	21/3	-9d	Bibiani ..	2 7 1/2		Hongkong ..	6 10 1/2	+3d	Turner & Newall ..	137/9	+3d
Durban Deep ..	23/6	+1/6	Bremang ..	1/3		Iphoh ..	15/6	-1 1/2	Wankie ..	18/-	-1 1/2
E. Champs ..	2/9	+3d	Ghana M.R. ..	1/9	-2d	Klunung ..	11/9	-3d	Witbank Colliery ..	5 1/2	-1
E. Daggas ..	3/3	+9d	Konongo ..	1 1/4		Kopong Dredging ..	4/9	+3d			
E. Geduld (4s. units) ..	28/-	+1/6	Maritz ..	1d	+1 1/2	Kinta Tin Mines ..	29/-	+6d	Canadian Mines ..		
E. Rand Props. ..	38/9	+1/3	Taguach ..	6d	+1 1/2	Malayan Dredging ..	16 7 1/2	-3d	Dome ..	\$28	+2
Geduld ..	70/-	+2/6	Western Selection ..	5/-	-1 1/2	Pahang ..	18/6	+10 1/2	Hollinger ..	\$70	-2
Govt. Areas ..	3 1/4	-1 1/2				Pengkalen ..	19/-		Hudson Bay Mining ..	\$129	-3 1/2
Grootevlei ..	16/-	+1/-	Australian Gold ..			Petaling ..	7/-	+1 1/2	International Nickel ..	\$217	
Hartebeestfontein ..	51/9	+1/3	Gold Mines of Kalgoorlie ..	13 1 1/2	+9d	Rambutan ..	19/6	-6d	Mining Corp'n of Canada ..	\$64	
Libanon ..	67/2	+1 1/2	Great Boulder Prop. ..	13/1	+3d	Siamese Tin ..	15 7 1/2	+6d	Noranda ..	\$100	-2
Luipeards Vlei ..	13 7/8	+7 1/2	Lake View & Star ..	19/3	+3d	Southern Kinta ..	21/6	+3d	Queumont ..	\$58	-1
Marievale ..	18 1 1/2	+6d	Mount Morgan ..	13/-	+1 1/2	S. Malayan ..	11/6		Yukon ..	5 10 1/2	-7 1/2
New Kleinfontein ..	3 1/4	+1 1/2	North Kalgurlu ..	7 1 1/2	+1 1/2	S. Tronoh ..	9 7 1/2	+3d			
New Pioneer ..	20/9	+1 1/4	Sons of Gwalia ..	1/9		Tekka Taiping ..	22/6	+3d			
Randfontein ..	31/6	-6d	Western Mining ..	9/3	+3d	Tronoh ..	14 7 1/2	+4 1/2	Oil ..		
Robinson Deep ..	7/3								Apex ..	60/-	-2/9
Rose Deep ..	8/6		Miscellaneous Gold ..			Tin (Nigerian and Miscellaneous) ..			Attock ..	51/3	+1/-
Simmer & Jack ..	3/9	+1 1/2	Cam & Motor ..	8/-		Amalgamated Tin ..	10/9	+1 1/2	Burmah Petroleum ..	18 1 1/2	+8 1 1/2
S.A. Lands ..	23/3	+9d	Champion Reef ..	6d	+3d	Bersit Tin ..	44/3	+1 1/2	Canadian Eagle ..	86 1/2	+5 7/8
Springs ..	2/-	+1 1/2	Falcon Mines ..	24 1/3	-3d	Buichi ..	4 1/4		Mexican Eagle ..	20/7 1/2	+1 1/2
Stilfontein ..	28/-	+3d	Globe & Phoenix ..	10 1/4		British Tin Inv. ..	25/3	-3d	Shell ..	213/6	+18 1/6
Sub Nigel ..	17 1/2	+1 1/2	Metopa ..	3d		Ex-Lands Nigeria ..	2 1/4		T.P.D. ..	110/-	+15 7/8
Vaal Reefs ..	3/3	+3d	Myosore ..	6d		Geevor Tin ..	18/6	+6d	Ultramar ..	75 7/8	+2 10 1/2
Van Dyk ..	3/3	+1 1/2	Nundyroog ..	47/-	-1/9						
Venterspost ..	12/6	+1 1/2	St. John d'el Rey ..	47/-	-1/9						
Vlakfontein ..	15/6	+1/-	Zams ..	53 1 1/2	-7 1/2						
Vogelstruisbuit ..	13/-	+6d									
West Driefontein ..	4 1/2	+1 1/2									

Mr. Spens states that there are 40 dredges under the management of Anglo-Oriental (Malaya) of which 26 were in operation at the end of March last, four were being reconstructed and ten were idle. The majority of these idle dredges, Mr. Spens said, will probably not work again, as tin-bearing ground easy to work and with values at shallow depth are practically exhausted in Malaya.

This is yet another reason why extensive prospecting in Malaya is becoming increasingly urgent. At present a large part of Malaya's dredging production comes from the deep low-grade deposits which of necessity require high-capacity deep digging dredges for economic operation. In the majority of cases the cost of converting a dredging unit to enable it to dig at what can only be described as an economical depth is beyond the financial resources of small companies. Thus, the continued exclusion of London Tin Corporation and similar companies from any

tax concessions under the Finance Bill must ultimately result in not only gradual but persistent decline in the production of tin but also in less than adequate prospecting activity—to the detriment of both Malaya and the United Kingdom.

ULTRA-DEEP

The much-discussed ultra-deep level gold mining project in the area lying immediately to the south of Blyvooruitzicht and West Driefontein Mines in the Far West Rand is now taking shape.

Sir Ernest Oppenheimer, in his annual statement to shareholders of Anglo American Corporation states that the launching of a major new gold mining enterprise on the Far West Rand is foreshadowed by the arrangements which have been under discussion for some time between Anglo American, Central Mining and Consolidated Gold Fields for the exploitation of the

potentially valuable mining area lying immediately to the south of Blyvooruitzicht and West Driefontein Mines. This is an extensive property, Sir Ernest said, and will call for the establishment of a very large and costly mining unit. But careful preliminary investigations already carried out indicate that the operating life of the new mine will be unusually long. In this connection Consolidated Gold Fields, who are proposing to make a new issue, refers to the provision which has to be made for its participation in the development of an ultra-deep mining project in the Far West Rand.

Sir Ernest also reveals in his annual statement (see page 764) that the Corporation acquired property and rights from the Titanium Corporation of South Africa relating to large deposits of titanium-bearing minerals. In the Umgababa district on the south coast of Natal. The new company formed to exploit the deposits, Umgababa Minerals Ltd., has made considerable progress in the establishment of a new extraction plant at an estimated cost of £1,500,000 and substantial quantities of rutile, ilmenite and zircon concentrates will be produced at Umgababa.

Rand and O.F.S. Returns for May

Company	May 1957			Year ends	Current Financial Year			Last Financial Year		
	Tons (000)	Yield (oz.)	Profit† (£000)		Tons (000)	Yield (oz.)	Profit† (£000)	Tons (000)	Yield (oz.)	Profit† (£000)
Gold Fields										
Doornfontein a.....	83	33,989	176.3	J	848	340,719	1652.8	596	214,414	1020.1
Libanon.....	103	23,104	56.1	J	1,082	242,731	605.5	1,075	234,915	610.0
Luipaards Vlei b.....	78	13,731	6.2	J	892	160,062	109.5	—	—	—
Rietfontein.....	24	5,622	16.1	D	123	28,289	80.3	130	29,528	91.9
Robinson.....	76	15,629	11.2	D	369	74,560	37.4	385	81,590	15.9
Simmer & Jack.....	95	17,787	19.2	D	473	87,356	90.4	508	88,270	76.4
Sub Nigel.....	66	16,958	25.4	J	727	200,590	466.2	729	226,952	822.4
Venterspost.....	129	30,450	65.2	J	1,371	315,536	722.2	1,329	315,260	811.4
Vlakfontein.....	50	18,005	86.1	D	245	87,827	423.5	202	73,740	363.8
Vogels a.....	100	23,101	54.5	D	496	115,376	292.0	503	127,414	544.4
West Drie a.....	75	71,627	590.8	J	825	776,224	6388.3	781	648,869	5192.7
Anglo American										
Brakpan.....	109	18,612	15.1	D	531	90,641	58.1	533	90,886	67.1
Daggas a.....	240	52,400	287.6	D	1,123	248,165	1356.4	1,066	242,607	1369.4
East Daggas.....	97	16,037	37.1	D	473	78,069	168.8	477	78,553	178.9
F. S. Geduld a c.....	56	34,571	210.7	S	398	484,841	1071.8	181	62,825	159.6
Lorraine a.....	65	12,933	L5.5	S	496	957,390	L52.9	347	57,589	L211.6
President Brand a.....	65	49,169	400.3	S	490	374,933	3080.0	417	333,145	2736.9
President Steyn a.....	93	35,214	196.1	S	714	277,218	1586.7	678	248,741	1401.4
S. A. Lands.....	92	19,890	67.2	D	442	96,348	329.4	436	86,783	256.1
Springs.....	126	13,580	5.2	D	623	68,659	28.3	627	76,688	58.5
Vaal Reefs a d.....	62	26,987	160.1	D	287	124,907	732.7	—	—	—
Welkom a.....	87	22,701	51.6	S	688	173,647	381.9	665	141,480	196.3
Western Holdings.....	100	46,130	315.8	S	734	335,683	2182.2	602	234,485	1393.1
West Reef Ex.....	124	26,869	66.5	D	609	131,363	315.8	589	117,197	221.2
Central Mining										
Blyvoor a.....	110	63,456	455.3	J	1,161	657,896	4777.5	1,158	652,456	4727.2
City Deep.....	150	30,161	17.5	D	733	145,024	90.3	735	143,398	13.8
Cons. M.R.....	180	23,833	9.0	J	1,827	253,474	98.0	1,867	263,342	166.7
Crown.....	245	35,929	2.5	D	1,205	176,263	L20.4	1,432	226,355	165.7
D. Roodepoort.....	190	33,329	53.8	D	915	160,511	258.8	900	154,958	254.5
East Rand Prop.....	230	59,431	166.4	D	1,063	277,973	575.1	1,041	270,642	878.2
Harmony a.....	85	33,576	174.7	J	866	308,350	1743.9	817	313,975	1608.6
Modder East.....	147	14,903	4.5	J	1,531	157,737	24.5	1,436	151,248	71.5
Rose Deep.....	52	7,935	0.4	D	246	38,044	1.2	220	36,227	7.4
J.C.I.*										
E. Champ. d'Or a.....	12	347	L27.8	D	60	1,690	L129.2	77	5,121	L168.0
Freddies Cons. a.....	62	15,426	16.9	D	284	70,967	L119.2	311	59,713	L227.7
Govt. G.M.A. a.....	100	17,629	1.0	D	628	103,207	L67.1	1,227	151,290	16.4
Randfontein b.....	70	11,726	1.0	D	391	65,699	74.7	—	—	—
Union										
East Geduld.....	145	44,577	317.0	D	689	212,062	1489.5	707	218,677	1553.4
Geduld Prop.....	107	16,872	27.0	D	517	81,878	133.0	527	78,299	173.9
Grootvlei.....	205	43,664	233.4	D	967	206,866	1085.1	959	207,103	1121.5
Marievale.....	74	19,341	86.7	D	354	93,049	416.7	351	92,095	423.7
St. Helena.....	116	33,758	186.7	D	579	168,855	928.5	491	145,573	779.0
Van Dyk.....	80	13,486	7.3	D	388	64,639	19.9	400	65,057	7.1
General Mining										
Buffelsfontein a c.....	106	33,643	151.0	J	467	137,525	526.3	—	—	—
Ellaton a.....	33	7,128	22.5	D	162	34,429	67.4	158	38,160	166.5
S. Roodepoort.....	30	6,955	25.6	J	318	74,252	260.8	304	69,510	247.9
Stifffontein a.....	98	43,844	279.4	D	478	205,588	1,280.5	436	171,422	1012.9
W. Rand Cons. b.....	147	22,929	16.5	D	715	102,803	75.4	—	—	—
Anglo-Transvaal										
Hartbeespoortfontein a.....	85	46,325	306.4	J	930	427,078	2647.9	586	261,856	1349.2
N. Klerksdorp a.....	10	1,238	L5.5	D	52	6,236	L25.9	54	6,417	L10.9
Rand Leases.....	171	27,189	8.0	J	1,765	275,499	L154.0	1,954	301,380	245.0
Village M.R.....	32	5,440	7.5	J	362	58,404	90.3	395	55,424	102.2
Virginia O.F.S. a.....	98	26,558	70.0	J	1,025	240,748	668.6	806	175,235	340.1
Others										
N. Kleinfontein.....	104	11,926	L3.9	D	489	56,348	L47.6	526	61,742	14.0
Wit Nigel.....	18	3,991	7.3	J	198	39,883	85.0	201	42,721	85.7

Gold has been valued at 249/10d. (April 24/10d.) per oz. fine. L indicates loss. † Working Profit. * Working Profit includes sundry revenue. a Excluding revenue from Uranium, Acid and Pyrite. b Gold Division only. c Production began January 1956. d Production began May 1956. e Production began January 1957. Operations at Merriespruit remain suspended.

NO O.T.C. BENEFITS FOR C.P.M.O.

Owing to the very high rate of Indian taxation, no material benefit will accrue to Central Provinces Manganese Ore Company under the terms of the Finance Bill, states Mr. H. R. Holmes in his annual statement to shareholders which is published on page 766 of this issue. Mr. Holmes also reviewed the transportation situation as it affected the company and said that the major portion of the company's stock lies at the mine, and if it could be transported to the coast there would be no difficulty in shipping it. The chairman hoped that the rail situation would improve but if it did not the time may come when the company would be compelled to reduce production, which would mean discharging part of the labour force with the result that production costs would increase, profits would contract and, consequently, smaller amounts would be paid in taxation.

GOLD FIELDS' PROPOSED ISSUE

The Consolidated Gold Fields of South Africa is proposing to increase its authorized capital from £8,000,000 to £11,000,000 by the creation of 3,000,000 £1 ordinary shares.

Subject to shareholders' approval at the extraordinary general meeting to be held on June 28, the company intends to issue 979,202 new £1 ordinary shares and £1,958,404 Unsecured Convertible Loan Stock and to offer these at a price to be announced later to existing holders of the ordinary shares in combined units of one ordinary share and £2 loan stock in the proportion of one combined unit for every five ordinaries held as at June 19.

The new ordinary shares so issued would not rank for the interim dividend already declared in respect of the year ending June 30, 1957, but they would rank for all subsequent dividends and in all other respects with the existing ordinary shares.

The loan stock will be convertible into ordinary shares in fixed proportions up to the end of 1961. Treasury consent to the issue has been obtained.

FINANCIAL NEWS AND RESULTS IN BRIEF

Bisichi Tin.—In the report and accounts for the year ended December 31, 1956, the chairman of Bisichi Tin, Mr. W. J. C. Richards, discloses that the Bisichi Company's holding in Naraguta Tin now totals 65 per cent and that the amalgamation of the two companies is under consideration. Net liquid assets at the date of the balance sheet totalled £188,887, and, as previously reported, the net profit for the year was £163,603. The dividend recommended is 40 per cent (same), leaving a balance carried forward of £129,270. The annual general meeting will be held on June 27, when a resolution increasing the authorized capital to £600,000 will be submitted.

Ex-Lands Nigeria.—At £86,979, net liquid assets of Ex-Lands Nigeria showed a slight decrease in 1956. As previously reported, net profit after tax was £23,479, a decrease from £31,173 in 1955. The dividend proposed is 15 per cent (same), absorbing £24,016, and £47,394 is carried forward. Major-General W. W. Richards, C.B., C.B.E., M.C., is chairman. Meeting, June 27.

Kadunas Pay More.—Preliminary figures for Kaduna Prospectors' and Kaduna Syndicate show better profits in each case. Kaduna Prospectors' net profit after tax in 1956 was £1,723 (£1,500 in 1955), and Kaduna Syndicate's earnings were similarly higher at £15,558 (£13,364). Prospectors' dividend is increased from 12½ per cent to 16½ per cent (4d. per share), while the Syndicate's remains unchanged at 25 per cent (3d. per share). Both annual general meetings are to be held on July 10.

Gopeng and Pengkalen E.G.M.'s Invalid.—The directors of Gopeng Consolidated and of Pengkalen have announced that the Court has ruled both the extraordinary meetings held on December 6 technically invalid, and that a further meeting must be called forthwith. Some further delay is therefore inevitable in making the proposed repayments of capital.

Rho-Kats Allot in Full.—Applications for the Rhodesia-Katanga £250,000 6 per cent loan stock totalled £206,450. Allotment has, therefore, been made in full and allotment letters have been posted. Dealings began on Friday, June 7.

Pahang Scrip Issue.—Pahang Consolidated are to issue 2,500,000 5s. ordinary shares by way of capitalization of reserves. 2,250,000 of the new shares will be issued to ordinary stockholders in the proportion of three new for every two 5s. stock units held, and the remaining 250,000 shares to preference stockholders in the proportion of five new for every £2 preference stock held. Treasury consent has been obtained.

Canadian Rio Tinto.—Rio Tinto Mining Company of Canada has underwritten almost 50,000 shares of Pater Uranium Mines at 65 c. and has taken an option on a further 49,995 at 65 c. and 150,005 at 75 c.

Burma Mines Taxed in Error?—In Burma Corporation's report for the quarter ended March 31, which appears opposite, it is pointed out that an

amount of £17,805 has been provided to meet retrospective Business Profits Tax under a new enactment. It is believed by the company, however, that the discriminatory effect of the enactment is unintentional, and an appeal has been made.

Rix-Athabasca.—In the quarter ended March 31, Rix-Athabasca Uranium Mines increased their operating profit before write-offs to \$89,121, against \$80,266 in the preceding period. The gross revenue from ore sales was \$244,465.

Tehidy Improves Dividend.—The annual report of Tehidy Minerals shows a slight improvement in taxed profits from £8,060 to £8,442. The recommended final dividend is 15 per cent (1955, 10 per cent).

No Change at West Spaarwater.—West Spaarwater's balance sheet at December 31 showed virtually no change. Net ex-

penditure during the year amounted to only £121 (1955, £120). Meeting, Johannesburg, June 28.

Kepong's Capital Reduction.—The directors of Kepong Dredging announce that the proposed reduction of capital by 2s. per 5s. share has been confirmed and that warrants are now available.

Halkyn's Reduced Profit.—In 1956, Halkyn District United Mines profit after tax was reduced to £29,332 from £43,148 in 1955. The recommended dividend is 7d., leaving a balance to be carried forward of £46,459. Meeting, London, July 3.

Austral Malay Group's Bonuses.—The directors of Austral Malay Tin and of Austral Amalgamated Tin have announced that certain of their assets have been revalued in order to present a truer picture of their respective financial positions. The revaluation has resulted in a bonus issue to Austral Malay shareholders of one for one, and to Austral Amalgamated shareholders of seven for ten. Share registers will be closed from June 18 to June 21.

BURMA MINES LIMITED

The following summarises the Operating results of BURMA CORPORATION (1951) LIMITED (Incorporated in the Union of Burma and jointly owned by Burma Mines Limited and the Union Government) for the NINE months ended 31st March, 1957.

ORE EXTRACTION

Quarter ended 30th September, 1956	31,597 tons
Quarter ended 31st December, 1956	30,442 tons
Quarter ended 31st March, 1957	28,059 tons
			89,998 tons

PRODUCTION

Quarter Ended	Concentrating Ore Milled (dry tons)	Ozs. Silver	ASSAYS % Lead	% Zinc
30th September, 1956	31,451	13.43	16.67	10.04
31st December, 1956	30,615	13.98	16.91	10.56
31st March, 1957	28,321	13.69	16.63	11.26

Marketable products were as follows:—

Quarter Ended	Refined Lead Tons	Refined Antimonial Lead Tons	Refined and Dore Silver Fine Ozs.	Copper Matte Tons	Nickel Speiss Tons	Zinc Concentrates 54%–58% Zn. Dry Tons
30th September, 1956	3,787	—	318,384	88	10	3,479
31st December, 1956	3,423	157	316,612	103	135	3,328
31st March, 1957	3,614	—	331,919	130	141	3,834
	10,824	157	966,915	321	286	10,641

ESTIMATED REVENUE AND EXPENDITURE

	30.9.56	Quarter ended 31.12.56	31.3.57	Total for 9 months ended 31.3.57
Gross Revenue (after adjustment of value of Metal Stocks)	K. 94,12,500 (£705,938)	K. 96,40,100 (£723,007)	K. 84,94,300 (£637,073)	K. 2,75,46,900 (£2,066,018)
Operating Expenditure	K. 58,79,200 (£440,940)	K. 62,12,200 (£465,915)	K. 65,29,800 (£489,735)	K. 1,86,21,200 (£1,396,590)
Operating Profit	K. 35,33,300 (£264,998)	K. 34,27,900 (£257,092)	K. 19,64,500 (£147,338)	K. 89,25,700 (£669,428)
Taxation	K. 18,45,800 (£138,435)	K. 17,66,500 (£132,487)	K. 12,34,600 (£92,595)	K. 48,46,900 (£363,517)
Depreciation	K. 2,02,500 (£15,188)	K. 2,33,000 (£17,475)	K. 2,44,300 (£18,322)	K. 6,79,800 (£50,985)
Capital Expenditure	K. 2,83,900 (£21,292)	K. 6,08,300 (£45,623)	K. 3,53,300 (£26,498)	K. 12,45,500 (£93,413)

The reduction in Gross Revenue, as compared with the previous two Quarters, is due to some extent to lower prices for sales of pig lead and zinc concentrates during the period but mainly to the effect of the substantial recent fall in the market price of lead on the present estimate of values of metal stocks at the close of the Quarter.

The provision for Taxation includes K.2,37,400 (£17,805) (an approximately similar amount also to be provided in the next Quarter) for additional Business Profits Tax for the current year and the previous year under a new retrospective enactment having discriminatory effect which, however, it is believed was not intended. Representations have been made for rectification which it is hoped may later result in release of this additional provision.

After deducting the foregoing estimates for Taxation and Depreciation the estimated Net Profit for the Quarter ended 31st March, 1957 is K.4,85,600 (£36,421) and for the NINE months to that date K.33,99,000 (£254,926).

The Sterling figures shown are based on a Rate of Exchange of 1s. 6d. per Kyat.

37 Dover Street, London, W.1.

CHAIRMAN'S STATEMENT: ANGLO AMERICAN CORPORATION OF SOUTH AFRICA LIMITED

(Incorporated in the Union of South Africa)

Anglo American Corporation's Widening Interests

SIR ERNEST OPPENHEIMER REVIEWS PROBLEMS OF GOLD MINING FINANCE AND TAXATION

TRANSPORT DIFFICULTIES IN THE FEDERATION

THE following are extracts from the statement by the Chairman, Sir Ernest Oppenheimer, which has been circulated to members:—

In all the main spheres of the Corporation's interests the dominant theme of the year's operations was one of rising production.

In gold mining, the operations of the newer mines administered by the Corporation continued to expand; and the output of uranium and the profits derived therefrom also rose above the preceding year's figures. In the diamond industry the companies in which the Corporation has large interests substantially increased their overall output of gem and industrial diamonds, but the industry as a whole was still unable to satisfy the large demand.

In the copper mining industry of Northern Rhodesia the mines in which the Corporation has important interests increased their production. Furthermore, the new Bancroft mine was brought to production ahead of schedule. In the coal industry the collieries administered by the Corporation raised their output to a new high level just short of 18,000,000 tons. In most of the other spheres of the Corporation's interests—in finance, in investment, in merchant banking, in prospecting—there was in 1956 a general expansion of activity.

The benefits flowing to the Corporation from this widespread and heightened activity are not fully reflected in the accounts for the year. Improved yields from associated operating and finance companies cannot always be passed on to the parent company in the same year. But another factor serves to hide the substantial improvement in recurrent investment income that accrued to the Corporation in 1956.

As the figures stand in the accounts, income from investments at £4,240,455 in 1956 was only £12,700 more than the £4,227,755 yield in 1955. But the 1955 figure included non-recurrent income which serves to invalidate comparison between the 1955 and the 1956 figures; and a better indication of the recent improvement in investment income can, perhaps, be obtained by comparing the 1954 figure of £2,761,848 with the 1956 figure of £4,240,455—an increase over the two years of no less than £1,478,607 or about 54 per cent.

The same non-recurrent income in 1955 also invalidates comparison between the Corporation's profit of £4,930,165 in 1956 and the £5,750,428 profit in 1955. The real measure of the inherent strength of the Corporation's general position can be gained from a study of other figures in the accounts.

In 1954 the Corporation showed a surplus of £736,752 from its realization of investments, after deducting amounts written off investments; in 1955 the net yield from this source fell sharply to £219,680; and in 1956 there was no surplus, but a net deficit of £450,074, which was the amount by which the sum applied to the writing down of investments exceeded the gross surplus derived from the sale of investments.

In spite of this very sharp change in this particular aspect of the Corporation's business, the other sources of the Corporation's income more than compensated for the loss of what has in the past been a substantial contribution to total income.

No Slackening of Momentum

There has been no slackening in the momentum of the Corporation's progress in the past twelve months.

The launching of a major new gold mining enterprise on the Far West Rand is foreshadowed by the arrangements which have been under discussion for some time between ourselves and our partners, Central Mining Finance Limited, and New Consolidated Gold Fields Limited, for the exploitation of the potentially valuable mining area lying immediately to the South of the existing Blyvooruitzicht and West Driefontein mines.

This is an extensive property, calling for the establishment of a very large and costly mining unit. An important feature of the careful preliminary investigations already carried out is the indication that the operating life of the new mine will be unusually long.

The search for new business and new enterprises has continued. Prospecting operations have been intensified and our geological teams are active in several parts of Southern and Central Africa, in some cases exploring largely unknown territory, as in the Western Rift area of Tanganyika where an exclusive prospecting licence covering approximately 34,000 square miles has been granted to one of the Corporation's associated companies.

Widening of Interests

Although our principal business is, and will remain, the mining of minerals, the financial resources that the Corporation and its associated companies command have made it possible for us to seek new outlets for investment and enterprise. In most of these new fields there is some association with our principal business.

Thus we have acquired the controlling interest in a company which mines manganese ore in the Krugersdorp-Randfontein district and has a long-term contract

to supply manganese to the uranium industry.

We propose to take whatever opportunities arise of exploiting profitably those minerals for which new applications are found and new values established. There has been a practical application of this policy in our decision to acquire from Titanium Corporation of South Africa, Limited, property and rights relating to large deposits of titanium-bearing minerals in the district of Umgababa on the South Coast of Natal. Substantial quantities of rutile, ilmenite and zircon concentrates will be produced at Umgababa.

A further interesting development in the Corporation's activities is its recent acquisition of a large shareholding in Peak Timbers Limited, which owns valuable pine tree plantations covering about 65,000 acres in the Piggs Peak area of Swaziland. This company has since negotiated a merger with a well-established company manufacturing plywoods and chipboards, Veneered Plywoods (S.A.) (Pty.) Limited, of Boksburg.

Last year I referred to the formation of Union Acceptances Limited. The success of this new enterprise in the field of merchant banking has encouraged us to extend our endeavours in this direction, and, towards the end of 1956, the Corporation sponsored the establishment of Rhodesian Acceptances, Limited, in Salisbury. Like its counterpart in South Africa, it has already proved its worth by helping to create a short-term money market and to finance the movement of goods.

More recently, Union Acceptances and Rhodesian Acceptances have both been linked with sources of large funds in Europe through the formation of a new South African-Swiss company, Union Acceptances (Zurich) A.G. There is little doubt that in Switzerland and in other parts of the Continent there is a climate of opinion favourable to the investment of funds in Southern Africa.

Activities in the Federation

Last year I mentioned that an inherited tradition as well as self-interest led the Corporation to take a leading part in assisting the progress of the Rhodesias. For several years now this territory has been developing rapidly.

There is, however, one vital sphere in which progress is lagging behind the needs of the country. Transportation facilities are severely restricted and until these are expanded there must be a brake on development. Clearly there is need for courageous capital expenditure on all communications. Because of the importance of this matter, to the country as a whole and thus also to our own in-

terests, we have provided substantial assistance in this direction.

We are nevertheless opposed to methods of obtaining major capital funds for railway development through the levying of punitive freight rates upon mineral traffic. In their report the directors have drawn attention to the anomaly that the increased railage rates for copper were calculated at a time when copper prices were abnormally and temporarily high; they have now fallen to very much lower levels. We have lodged a formal appeal against these discriminatory freight rates.

This issue is of particular importance in view of the fact that the maintenance of even the present tempo of development in the Federation requires a large and continuing flow of new money into the Federation, and every possible encouragement must be given to investment in the territory from outside.

Fortunately, general conditions for investment in the Federation are favourable. There is prosperity and expansion everywhere. The copper mining industry is not as prosperous as it was when copper prices were inflated by a large excess of demand over available supply, but even at current price levels, the industry makes substantial profits, and its contribution to the economy of the Federation is very large indeed.

Investment Situation

The investment situation in South Africa deserves the close and anxious attention of all who are engaged in the business of mining and mining finance. It is common knowledge that the flow of money to the Union for investment and development has dwindled recently. There has been since 1954 almost unrelieved depression in the market for South African gold shares.

This is a most serious situation for an industry which must constantly be developing new enterprises to replace its wasting assets. It is especially serious in view of the fact that capital costs and working costs continue to rise, with the result that new mining ventures require the provision of progressively larger amounts of capital.

It seems to me that we are confronted with a new situation and a new challenge.

Two lines of approach suggest themselves. There is an evident need for closer organization of mining finance and indeed the trend has been in this direction for some time. Mining finance houses have tended to develop into large corporations that can not only finance important mining ventures themselves but can also absorb the occasional loss encountered by even the most successful and efficient mining groups.

There is also, to an increasing degree, recourse to those forms of co-operative financing whereby a number of mining groups participate in agreed proportions in providing capital for new ventures.

These procedures, however, will not, in themselves, be sufficient to meet the full requirements of the situation. Mining companies and mining groups will always depend to some extent upon outside support in the provision of development capital. In my view, the mining industry is entitled to look increasingly for this support to the financial institutions, the traditional

investment agencies of the general public.

Accumulation of private funds in such institutions has reached immense proportions, and this in turn has meant that progressively less money has remained in the hands of individuals for personal investment.

The argument that financial institutions have a fiduciary responsibility which cannot be reconciled with the placing of funds in ventures having a recognised risk element such as mining can no longer be upheld.

In the United Kingdom, in Canada and in the United States of America the institutional investment houses are increasingly devoting a proportion of their funds to so-called risk ventures. Where such risks as may be involved are properly spread, they become sufficiently dispersed as to be innocuous, and any losses will be more than counterbalanced by the success of other similar ventures.

It may be that the one development will stimulate the other; that the growth of large mining corporations with substantial spreads of interests, and of mining investment trust companies with varied portfolios of mining shares, will in itself come to provide suitable channels for the investment of institutional funds.

Gold Mining Taxation

I should like to refer briefly to the question of gold mining taxation, for there is no doubt that this is a factor of material influence upon the investment status of the gold mining industry.

The Government is well aware of this fact and has recently endeavoured to assist in a number of ways, but in view of the fact that State revenues from gold mining taxation will rise very considerably over the next few years as the newer mines reach full production, there is a strong case for further relief in the onerous and discriminatory burden that is still being imposed on the industry.

It may not be generally realised that, in the case of a rich mine, amounts payable to the State by way of share of profits and taxation can amount to as much as two-thirds of the working profit.

Furthermore, I am inclined to think that the present situation requires in addition an examination of tax policy from the specific standpoint of the shareholder or investor in gold mining companies.

The wasting character of gold mining has been recognised in so far as the taxation of the mining companies themselves is concerned—namely, in the capital redemption allowances that are made before tax is levied. But this same principle is not applied in respect of the dividend income of the individual investor where, as is common, he is liable to supertax.

Yet, because of the wasting nature of the asset in question, the investor is obliged to treat a portion of the dividends he receives as a return of capital, and, in fact, should be encouraged to do so by having that portion of his dividend income accepted for tax purposes as a return of capital.

In Canada the return of capital element in mining dividends is officially recognised by exempting from tax a varying percentage of such dividends in the recipient's hands.

It seems to me that if local and foreign investment interest in our gold mining industry is to be restored and capital for this purpose attracted, then we should give serious consideration to the introduction into our taxation system of some arrangement of the kind I have mentioned.

If this suggestion were to be favourably received, it would be desirable for the South African tax authorities to discuss the matter with other Governments, notably the United Kingdom Government, in order that the overseas shareholder should not be unfairly penalised.

It is my belief that the remissions of tax involved would be small in relation to the benefits that would accrue in the stimulus to the flow of investment funds and to the development of mining enterprise.

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CENTRAL PROVINCES MANGANESE ORE

A SATISFACTORY RESULT

DEMAND WELL MAINTAINED

HAMPERING EFFECT OF TRANSPORT DIFFICULTIES

MR. H. R. HOLMES' REVIEW OF ACTIVITIES

The 49th annual general meeting of The Central Provinces Manganese Ore Company Limited was held on June 12 at Winchester House, Old Broad Street, London, E.C.2, Mr. H. R. Holmes (the Chairman) presiding.

Mr. T. D. de Deney, F.C.I.S. (the Secretary), read the notice convening the meeting and the report of the auditors.

The Chairman said:—The Report and Accounts for the year ended December 31, 1956, have been in your hands for some time, and with your permission I will take them as read. (Agreed.)

With regard to the Accounts, I propose only to deal with those items which I consider of particular interest or which require some explanation.

The balance on trading, £1,695,935, I hope you will consider satisfactory, and you will notice that it is shown after transferring £225,622 to Ore Stock Reserve. The necessity for this transfer arises from the fact that although the demand for our ore has continued to be satisfactory, we were unable to deliver as much ore as we produced, owing to the lack of transport from the Mines to the Coast; consequently, you will notice from the Balance Sheet that the stock of ore rose during the year from £1,027,327 to £1,717,401. This is due in the main to an increase in the tonnage of ore in hand, but also, to a certain extent, to an increase in costs in respect of mining, railway and port charges. In view of this the Directors have thought it essential to transfer the sum of £274,378 which has been standing to the credit of Reserve on Revaluation of Stock to an Ore Stock Reserve, and also to add to this the sum of £225,622 to make a total Ore Stock Reserve of £500,000, which sum has been deducted on the Balance Sheet from the item Stock of Manganese Ore. The major part of our stock lies at the Mines, and if we could transport it to the Coast there would be no difficulty in shipping it, but there is a limit to the extent that we can continue to produce ore in excess of that which we can deliver, as by so doing we should merely pile up a stock of ore and denude our cash resources. It must be remembered that, so long as our profits are represented to some extent by an increase in our stocks, our liquid situation must deteriorate as we have to pay a heavy rate of taxation in cash on all profits.

We hope that the railing situation will improve, but if it does not the time may come when we shall be forced to reduce production, which will mean discharging part of our labour force, and the result would be an increase in the cost of production, a reduction in profits and a consequent smaller amount to be paid in taxation. We naturally should be very reluctant to take this step, and we hope that the necessity will not arise.

During the year under review there was a steady improvement in the price of manganese ore in the world's markets. There may however be a reversal of this tendency, owing to the introduction of new sources of supply from mines being opened up in other countries of the world,

and also to fluctuations in the world's production of steel. Nevertheless, there is at the moment a good demand for our ore, but, as I said above, the outlook for the current year depends largely on railings, which at present are unsatisfactory but which we hope will improve.

The Accounts

Of the Profit, Taxation takes £1,080,000, all but £18,000 of which consists of Indian Taxes. On the debit side of the Profit and Loss Account depreciation of fixed assets amounts to £171,271, against £129,428, and this, of course, is owing to the substantial expenditure we have made in recent years on plant, machinery, and buildings for the efficient working of the mines.

On the Assets Side of the Balance Sheet, under Trade Investment, appears the item £50,000 Shares in the United Kingdom Ferro Manganese Co. Ltd. This was the position at the end of the year, but since then, these shares have been sold and our financial connection with this Ferro Manganese Co. has come to an end, though our relations with them remain very good. For some years past the working of the Agreements has not been possible, and the association fulfils no useful purpose under present-day conditions.

You will notice that, on the liabilities side of the Balance Sheet, we have deducted from the Contingencies Reserve a sum of £42,091 paid in respect of Indian Estate Duty. This is the amount which has accumulated over a period of some three years, and to a large extent is represented by Estate Duty which arose on the death of our largest personal shareholder. However, such a large payment is not likely to occur again.

Mines in Satisfactory Condition

As no doubt you know, the Government of India have established the Indian State Trading Corporation which is now operating apart from other commodities, in the manganese ore business. During the year Mr. Hardy, one of our Joint Managing Directors, paid two visits to India in July and August, and again in the early part of this year, to discuss with the Government of India officials in Delhi our connection with this Corporation which we trust may result in increased exports of our ore to our usual customers.

Mr. Hardy also visited the Mines in India to make a thorough inspection of the properties. He submitted full and informative Reports to the Board and settled several outstanding matters regarding the future working of the Mines. I am pleased to say he found the Mines in satisfactory condition.

The Heavy Media Plant continued to operate successfully at Dongri Buzurg Mine producing ore of good quality. Certain alterations to the Plant and the preliminary screening plant were undertaken which reduced the tonnage put through it, but, due to poor railings, this was not a matter of any consequence.

Diamond Drilling Programme

Our Diamond Drilling programme continues, and drilling has taken place at

Gumgaon, Kandri, Munsar, Satuk and Ukwa Mines. This work, particularly at Ukwa and Kandri Mines, has indicated the existence of very considerable tonnages of ore of excellent quality at easily workable depths.

Construction on the Government Electricity grid supply has unfortunately been hampered by a shortage of materials and power is not expected to be supplied at our Tirodi and Balaghat Mines until late this year. These Mines are now equipped to take the power as soon as it becomes available. Shaft sinking at Balaghat continued during the year and the permanent head frame for the new shaft and the two hoists should be completed by the time power is available.

I am glad to say that our relations with the different Authorities in India continue on a satisfactory basis.

In November of last year your two Joint Managing Directors, Mr. A. Linton and Mr. W. A. Hardy, visited the United States of America to keep in touch with our very important customers there and to discuss with them several business matters. These customers are the largest producers of ferro manganese in the world and we have had very cordial relations with them for many years now.

I would not like this opportunity to pass without expressing our appreciation of the understanding of our problems by all our Buyers.

Effect of Finance Bill

I expect many of you are wondering whether the provisions of the Finance Bill 1957, relating to Companies Trading Abroad, will be of material benefit to your Company. I am afraid that the answer to this is in the negative. The reason for this is that, owing to the very high rate of Indian Taxation, there is, to all intents and purposes, no margin for any benefit to your Company.

An Interim Dividend of 1s. 2d. per unit free of tax was paid on October 1 last, and your Directors now recommend that a Final Dividend of 1s. 8d. per unit, plus a bonus of 8d. per unit, both free of tax, should be paid, altogether absorbing £525,000. This will leave £281,197 to be carried forward as compared with £257,130 brought in.

Tribute to Management and Staff

On your behalf, I should like to record our thanks to the management and all employees, both in India and in London, for their efforts during what has not been an easy year. I would also like to mention the efficient and helpful work done by our Shipping Agents in India, Messrs. James Finlay and Co. Ltd.

I now beg to move:—"That the report of the Directors and Statement of Accounts as at December 31, 1956, be and are hereby approved and adopted, and that the profits be appropriated as recommended by the Directors". I will ask Major Herring to second the motion, and before putting it to the Meeting I shall be glad to deal with any questions which Stockholders may wish to ask.

Major A. C. Herring, V.C., A.C.A., seconded the resolution which was carried unanimously.

The Board's proposal of a final dividend of 1s./8d. per unit, free of tax, and a bonus of 8d. per unit, free of tax, was also approved.

The retiring director Major A. C. Herring, V.C., A.C.A., was re-elected and the remuneration of the auditors, Messrs. W. A. Browne and Co., having been fixed, the proceedings terminated.

LONDON TIN CORPORATION

CHAIRMAN'S STATEMENT

The 31st Annual General Meeting of London Tin Corporation Limited will be held on July 3 at The Chartered Insurance Institute, 20, Aldermanbury, London, E.C.

The following is the statement by the Chairman, Mr. J. Ivan Spens, O.B.E., which has been circulated with the report and accounts for the period of eleven months ended March 31, 1957:

Accounts

Shareholders have already been informed of the Board's decision to make up the Accounts of the Corporation to March 31, in each year. Accordingly the Accounts now submitted cover the period of eleven months ended on March 31, 1957.

The net profit for the eleven months' period after providing £652,000 for taxation was £714,726 compared with £883,642 in the previous year when substantial profits arose from the sale of part of our shareholdings in two then subsidiary companies to reduce such holdings to less than 50 per cent. of the issued capital of each of those companies.

The gross income from investments and interest for the eleven months' period was only very little short of that for the whole of the previous year and was sufficient, after taxation, to maintain the dividend of 30 per cent., less income tax at 8s. 6d. in the £, which took £624,146 leaving a balance for the period of £90,580 to be added to the amount carried forward, which now stands at £289,590.

Unless any unforeseen circumstances arise it will be the intention of the Directors to declare interim dividends in October and February in each financial year as has been done in the period under review. So far as can at present be seen the provisions of the Finance Bill now before Parliament will in no way benefit this Corporation.

Price of Tin

The average London cash price of tin metal during the period under review was £781 per ton. The highest price reached during the period was £890 and the lowest £723 per ton. At the meeting of the International Tin Council held in London in March, 1957, the prices of tin for the purpose of the operations of the Buffer Stock management were revised. The floor price was increased from £640 to £730 per ton but the ceiling price remains at £880 per ton. Between £780 and £830 per ton the Buffer Stock management will not operate in the market.

Malaya

Malaya should emerge as an independent member of the Commonwealth during 1957. Last year in my Statement I referred to the observations of His Excellency the High Commissioner as to the future policy of the Government. I can only say that we look forward to a continuance of successful mining operations under the new Constitution which may be assured of the support and close co-operation of the tin mining industry.

Of the forty dredges under the management of Anglo-Oriental (Malaya) Limited at the end of the period under review twenty-six were in operation, four were being re-constructed, and ten were idle.

The fact must be faced that the majority of these idle dredges will probably not work again. Most of them are of small treatment capacity and comparatively shallow digging depth; consequently they are not economical units in other than ground which is easy to work and where values are found at a shallow depth. Ground of this kind in Malaya is practically worked out, and a large part of Malaya's dredging production now comes from the deep low-grade deposits which of necessity require high capacity deep digging dredges for economic operation. Two of these idle dredges are already scheduled to be taken out of commission and dismantled, one is scheduled for reconstruction on another area, and one remains idle for security reasons, but the rest will remain on a care and maintenance basis for a reasonable time in case suitable employment can be found for them. Large-scale prospecting is becoming increasingly urgent but, although the security situation continues to improve, extensive prospecting cannot yet be undertaken in certain districts with confidence. The total output of tin concentrate from the mines managed by Anglo-Oriental (Malaya) Limited during the period under review was 14,943 tons which is at the rate of 16,301 tons per annum, compared with 17,003 tons produced during the previous year.

Thailand

The output of tin concentrate from the dredges under Anglo-Oriental (Malaya) Limited's management in Thailand during the period was 1,610 tons which is an annual rate of 1,756 tons, compared with 1,278 tons in the previous year.

Burma

The efforts made by Anglo-Oriental (Malaya) Limited during last year to visit the mines and examine the plants, despite the difficult conditions, have been followed up during the period under review with the result that, by the end of March, 1957, two small dredges had been rehabilitated sufficiently to start trial running. The security situation, however, continues bad and effective full-time operations cannot be expected at present.

Nigeria

The mines under the management of A. O. Nigeria Limited produced 4,181 tons of tin concentrate and 695 tons of columbite during the period under review which is at an annual rate of 4,561 tons and 758 tons respectively, compared with the previous year's outputs of 4,707 tons of tin concentrate and 883 tons of columbite. Active prospecting was continued as well as research into the problems of ore dressing and suitable plant for the separation of rare earths for industrial use.

Directors

We welcome The Right Honourable Lord Colyton, P.C., C.M.G., Sir Eric Mieville, G.C.I.E., K.C.V.O., C.S.I., C.M.G., and Mr. G. J. A. Jamieson who were recently appointed to the Board. In accordance with the Articles of Association they retire at the Annual General Meeting and offer themselves for re-election.

Staff

Our thanks are due to the Management and Staff throughout the Organization for the work carried out during the year.

Publications Received

A fourth inventory report on the copper, nickel, lead and zinc resources of Ontario has been released by the Ontario Department of Mines. The publication, which is Metal Resources Circular No. 2 of the Department, is a completely revised edition of earlier reports. All known deposits of these base metals are listed under their respective mining divisions and are also indexed alphabetically by company and township.

*

The world's first mass-produced, portable reactor, only 9 ft. high and utilizing 7,500 lb. of lead per unit for gamma ray shielding, is featured in the latest issue of the Lead Industries Association quarterly *Lead*. It exemplifies lead's great contribution to the atomic age by providing compact protection against rays which are harmful if not carefully controlled.

*

Vivian Younger and Bond Ltd. have issued the 1957 edition of their chart showing average prices of copper, lead, zinc and tin in London during the last 20 years. This valuable record is obtainable from the company, whose address is Princes House, 95 Gresham Street, London, E.C.2.

*

In the 1957 edition of *The South African Electrical Year Book* certain sections have been expanded and new chapters added to fill the gaps of previous editions. Of particular interest is the substantial section on automation, presenting the general trend of this practice and its application to South African industry. The work also covers the annual reports of the important associations and organizations in the electrical fields, namely the Electricity Supply Commissions for the Union and the Central African Federation, the Association of Municipal Electrical Undertakings, and the South African National Committee on Illumination. Local developments reported include the Kariba hydro-electric project. A valuable publication.

*

The year 1956 marked the fortieth anniversary of Demba's incorporation as a company in British Guiana. To mark the occasion the Demerara Bauxite Company has published a small pamphlet depicting all phases of the mine's social and technical life. The book emphasizes the training programme for workers and offers an impressive record of the part played by the mining industry in developing the territory.

*

Flotation Plant Practice, by Philip Rabone and published by Mining Publications Ltd. at 40s., contains 255 pages including index and illustrations. The work, a fourth edition, is based on some lectures delivered by the author on modern flotation practice. These lectures were designed to give the general engineer and student a broad conception of the subject and were not intended for the flotation specialist.

Since many of the milling and flotation methods employed in the treatment of common classes of ores have become reduced to a more or less standard basis in modern practice, it is mainly these standardized methods that are described in the book. A few special processes, however, have been included to indicate

(Continued on page 770)

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*This feature appears every
 fourth week*

Conferences and Exhibitions

The complete programme for the International Mineral Dressing Congress is now available. This event will be held in Stockholm, Sweden, from September 18-21, 1957. The sponsors are the central organisations of the Swedish mining and steel industries: Sevniska Gruvforeningen and Jernkontoret. The address of the International Mineral Dressing Congress is Näckströmsgatan 1, III, Stockholm C., Sweden.

The 26th Exposition of Chemical Industries is to be held in the New York Coliseum from December 2-6, 1957. This event caters for all the requirements of the chemical industries and is organized by the International Exposition Co., of 480 Lexington Avenue, New York 17.

The third biennial Production Exhibition, which deals with methods of increasing productivity in industry, will be held in the Grand Hall, Olympia, London, from May 12-21, in 1958.

Over 50 countries were represented at the International Sales Congress held by Ruston and Hornsby at Harrogate. The object of the congress was to assemble as many agents as possible together for a comprehensive tour of the works, an introduction to the new research centre, and a review of the current trade position.

A record-breaking attendance of at least 650 metal scientists from more than 36 countries is predicted for the Second World Metallurgical Congress, which will be held in Chicago, Illinois, U.S.A., on November 2-8, 1957. The biggest delegation is that from Great Britain with 95 advance registrants. This is followed by 88 from Germany, 65 from Japan, 42 from France, 29 from Sweden, 27 from Belgium, 19 from Switzerland, 18 from Italy and 16 from India.

The International Tin Research Council's 25th anniversary will be celebrated this year. The occasion will be marked by two Open Days, July 10 and 11, at the Council's headquarters and laboratories at Fraser Road, Greenford, Middlesex.

The next exhibition to be organized by the Gauge and Tool Makers' Association will be held in the National Hall, Olympia, London, from May 12-28, 1958.

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Publications Received—continued.

the general trend of progress. A worthwhile study.

★

British Nylon Spinners Ltd. have recently published a new and revised edition of *Nylon Goes to Work*, a twenty-page booklet describing some of the more important uses in industry for nylon textiles, ropes and nets. The booklet is illustrated with more than 30 photographs showing nylon in action.

The development of nylon for industrial purposes has been extremely rapid since the first edition was published two years ago. Completely new sections which are now included, deal with tarpaulins, car upholstery, papermakers' felts and lorry tyres. There has been extensive revision of most of the other sections dealing with subjects from filter cloths and fishing nets to ropes and belting. While this is essentially a non-technical publication, it contains much useful information about nylon's properties.

★

Yesterday, Associated Iliffe Press Ltd. published a new work on polythene. *Polythene* is edited by Mr. A. Renfrew, Director of Imperial Chemical Industries, Ltd., Plastics Division, and Mr. P. Morgan, Editor of *British Plastics*; 38 distinguished specialists drawn from Great Britain and the United States have contributed chapters in their own specialised fields.

All the relevant known facts about the material have been assembled for this critical appraisal including its history, manufacture, structure of

properties, methods of fabrication and applications. The last section includes chapters on future trends. New developments are constantly taking place in the whole field of manufacture and applications of polythene, and no effort has been spared to ensure that the latest information is included in this new book.

★

The May, 1957, issue of *Economic Geology* contains, *inter alia* a paper on a truck-mounted spectrographic laboratory designed and built by the U.S. Geological Survey for use in geochemical exploration.

★

We welcome the first issue of *Impulse*, a publication backed by Mitchell Engineer-

ing Ltd., and designed and published by Journal Press, which seeks to publicise Britain's scientific research and industrial technique, both at home and abroad. With assistance from the Foreign Office and the British Council, half the circulation is distributed to selected quarters abroad.

★

The Spring, 1957, issue of *Zinc Bulletin* is the first to be issued from the new headquarters of the Zinc Development Association and its affiliates at 34 Berkeley Square, London, W.1. Some of the latest developments in the zinc-using industries, as well as the improved facilities available to members and enquirers at the new London zinc centre, are described in this issue.

RECENT INTERIM DIVIDEND ANNOUNCEMENTS

Company	Year ending	Dividend		Date payable	Total last year %
		Latest	Corresponding		
Rand Selection	30. 9.57	20(a)	Nil	—	45
Lower Perak Tin	30. 4.57	37½	50	July 3	87½
Kuala Kampar	31. 3.57	180(b)	110	July 3	170
"Writs."	31.12.57	10	7½	July 1	20
"Amits."	31.12.57	37½	37½	July 1	100(c)
Brakpan	31.12.57	7½	7½	July 1	17½
Dagga	31.12.57	50	55	July 1	110
E. Dagga	31.12.57	7½	7½	July 1	15
S. A. Lands	31.12.57	42.9	42.9	July 1	85.7
Vaal Reefs	31.12.57	25	nil	July 1	20
W. Reefs	31.12.57	25	25	July 1	50
Cons. Goldfields	30. 6.57	5	5	July 26	20

(a) Interim introduced this year "in accordance with shareholders' wishes".

(b) Including 3/- (60%) special dividend relating to earlier years.

(c) Including 2/6 (12½%) bonus.

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